

THE  
**MEDICAL JOURNAL**  
**OF AUSTRALIA**

VOL. II.—11TH YEAR.

SYDNEY: SATURDAY, SEPTEMBER 27, 1924.

No. 13.

# Surgical Instruments

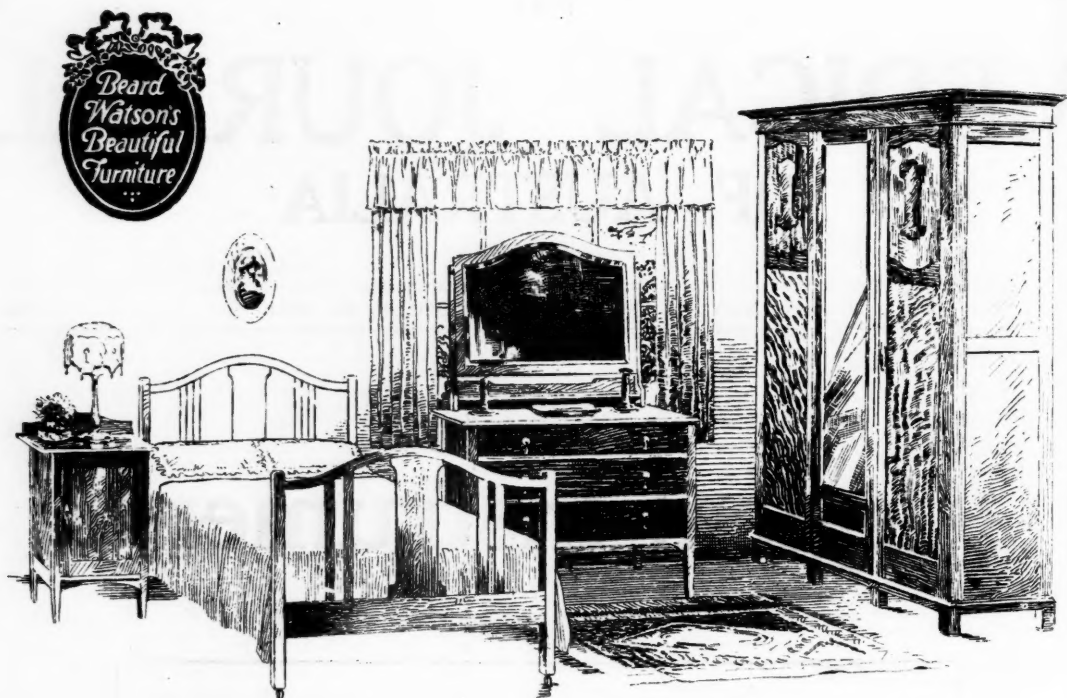
We are pleased to announce that good general stocks of our Surgical Instruments have arrived and that regular supplies are now coming forward. Members of the Profession are cordially invited to visit our Show Rooms.

## Allen & Hanburys (Australasia) Ltd.

Instrument Makers to H.M. Army and H.M. Navy

AUSTRALASIAN BRANCH:

**B.M.A. BUILDING : Elizabeth Street, Sydney**



## The "HORNSBY" BEDROOM

*In Oak or Maple, Fumed or Waxed.*

**P**LAIN, simple lines, sound, conscientious construction and careful finish, place the *Hornsby* Bedroom Suite amongst the most popular of recent creations. The *Hornsby*, with the bedstead to match, will adequately and suitably furnish the bedroom and give all the accommodation to be desired, at a very moderate price.

(G1/295) 5 ft. Wardrobe with beautifully figured panels, two-thirds hanging space, with brass rod for coat hangers, shelf for hats, one-third trays and shelves. 3 ft. 6 in. Dressing Table, three deep drawers and shaped bevelled mirror. Pedestal Cupboard en suite.

PRICE: £39/15/- 3 pieces complete.

(G7/221) 4 ft. 6 in. Bedstead, shaped head and foot, nicely figured, £6/10/- extra.

**Beard Watson & Co. Ltd.**  
GEORGE STREET, SYDNEY.

HOUSE FURNISHERS

# THE MEDICAL JOURNAL OF AUSTRALIA

VOL. II.—11TH YEAR. SYDNEY: SATURDAY, SEPTEMBER 27, 1924.

No. 13.

## Table of Contents

ORIGINAL ARTICLES—	PAGE.	CURRENT COMMENT—	Page.
"The Indications for Sympathetic Ramisection, Together with Observations on Muscle Tone," by N. D. ROYLE, M.B., Ch.M. . . . .	313	Goutre and Mental Disease . . . . .	328
"The Nervous Mechanism Concerned in the Production of Plastic Tonus," by JOHN I. HUNTER, M.D., Ch.M. . . . .	318	The Nutrition of Articular Cartilage . . . . .	329
"A Further Progress Report on the Health Programme of Halifax and Dartmouth," by B. FRANKLYN ROYER, M.D., D.Sc., Fellow A.P.H.A. . . . .	320	<b>ABSTRACTS FROM CURRENT MEDICAL LITERATURE—</b>	
"The Treatment of Tuberculous Abscesses," by HUGH C. TRUMBLE, M.C., M.B., B.S., F.R.C.S. . . . .	322	Gynaecology and Obstetrics . . . . .	330
		Neurology . . . . .	331
<b>REPORTS OF CASES—</b>		<b>BRITISH MEDICAL ASSOCIATION NEWS—</b>	
"Hysteriform Fits and Regression of the Affect in a Case of Encephalitis Lethargica," by CLIFFORD HENRY, M.B., Ch.M., D.P. . . . .	324	Scientific . . . . .	332
"Primary Carcinoma of the Appendix," by P. E. WALTON SMITH, M.B., M.R.C.P. . . . .	325	Nominations and Elections . . . . .	336
<b>REVIEWS—</b>		<b>CORRESPONDENCE—</b>	
Anæsthesia . . . . .	326	The Sex Problem . . . . .	336
Gonorrhœa in Women . . . . .	326	Leprosy in Australia . . . . .	336
The Prevention of Disease . . . . .	326	<b>PROCEEDINGS OF THE AUSTRALIAN MEDICAL BOARDS—</b>	
<b>LEADING ARTICLES—</b>		New South Wales . . . . .	337
The Doctor John B. Murphy Oration . . . . .	327	Victoria . . . . .	338
		Queensland . . . . .	338
		Tasmania . . . . .	338
		<b>MEDICAL APPOINTMENTS</b> . . . . .	338
		<b>MEDICAL APPOINTMENTS VACANT, ETC.</b> . . . .	338
		<b>MEDICAL APPOINTMENTS: IMPORTANT NOTICE</b> . . . . .	338
		<b>DIARY FOR THE MONTH</b> . . . . .	338
		<b>EDITORIAL NOTICES</b> . . . . .	338

### THE INDICATIONS FOR SYMPATHETIC RAMISECTION, TOGETHER WITH OBSERVATIONS ON MUSCLE TONE.<sup>1</sup>

By N. D. ROYLE, M.B., Ch.M. (Sydney),  
*Honorary Orthopædic Surgeon, Lewisham Hospital;*  
*Honorary Orthopædic Surgeon to the*  
*State Children's Relief Board,*  
*New South Wales.*

THE apparent failure of the principle of reciprocal innervation in spastic muscles was the clinical observation that induced me to investigate the problem of treatment in spastic paralysis.

IN THE MEDICAL JOURNAL OF AUSTRALIA of February 15, 1919, I have recorded a clinical experiment in which I tried to relax the spastic plantar-flexing muscles in the presence of ankle clonus by stimulating electrically the common peroneal nerves. It was only when the dorsi-flexing muscles were approaching their full contraction, that the ankle clonus ceased and in some instances the clonus could not be inhibited by this method. This observation strengthened the impression that reciprocal innervation was not effective in spastic paralysis, but it was not until I became aware of the presence of the double innervation of skeletal

muscles that I thought of relating the action of the sympathetic nerves to the abnormal physiological condition of the muscles in spastic paralysis.

During the year 1922 when actively engaged upon the investigation of flaccid paralysis I tried to produce spastic paralysis in the rabbit and in the goat with a view to observing the change that would occur after the removal of the sympathetic nerves. These experiments were not successful in so far as I was unable to produce a condition such as is seen in spastic paralysis of the human subject. I am indebted in this connexion to Professor Hunter for a suggestion that the spinal animal would be a suitable medium for observing the effect of removal of the sympathetic nerves upon hypertonic muscles.

#### The Spinal Animal.

Following upon this suggestion I carried out experiments upon the spinal animal and found that the removal of the sympathetic nerves from the left lower limb had a definite effect upon the posture of that limb. Complete transection of the cord is followed immediately by flaccid paralysis which is replaced after a variable period by a spastic condition of the muscles supplied from the cord below the line of section. If the spinal animal is placed on its back, the lower limbs are held in flexion and adduction, but when the sympathetic nerves are removed, the position of flexion is lost

<sup>1</sup> Read at a meeting of the New South Wales Branch of the British Medical Association on July 31, 1924.



FIGURE I.  
Showing the effect of the division of the left abdominal sympathetic trunk in a "spinal animal."

as a posture and the limb tends to fall in a position determined by gravity and other mechanical factors (see Figure I.). In such an animal reflex activity affects the lower left limb as well as the right and the limb can be drawn into flexion upon the receipt of appropriate stimuli.

#### The Normal Animal.

This result was encouraging, but the next point I had to determine was whether the removal of the sympathetic nerves would have any detrimental effect upon the control of movement or upon the nutrition of muscles. Normal animals were consequently deprived of the sympathetic supply to the left lower limb. This did not prevent the animal walking and running in a normal fashion and there was no wasting following the procedure, but when the animal was placed on its back a characteristic difference could be observed. A normal animal when placed on its back evidently endeavours to correct a feeling of instability by strongly extending all four limbs. All the animals under observation did this and the extension was very strongly maintained when such an animal was frightened. When the animal was quietened, the left lower limb fell from the extended position and occupied a position of semiflexion and adduction, apparently under the influence of mechanical forces, while the right limb remained extended. Here, as in the spinal animal, the removal of the sympathetic nerves had an effect on posture and rendered continuous volition on the part of the animal necessary for the maintenance of a definite position.

#### The Decerebrate Animal.

The decerebrate animal was next subjected to experiment. The principle of reciprocal innervation and many of our ideas of muscle tonus we owe to the work of C. S. Sherrington on decerebrate animals. He found that when the mid-brain was cut through in a certain position, the excitability of the centres controlling the extensor or anti-gravitational muscles of the head, trunk and limbs was so increased that ordinary stimuli arising from the periphery maintained these muscles in a state

of reflex tonic contraction. These muscles showed several remarkable characteristics that led the discoverer to apply the term "plastic" tone to the condition. If an attempt be made to flex the extended limb of a decerebrate animal, the resistance to the passive movement will relax after an interval and the limb will tend to remain in the position imposed on it by the passive movement. The limbs of a decerebrate animal do not always remain extended, but may relax and take up a semi-flexed position. If the limb be now passively placed in extension, it will tend to remain in the extended position. These phenomena have been described by Sherrington as "lengthening" and "shortening" reactions and have been shown by him to depend upon reflexes from the proprioceptors in the muscles themselves.

Experimental results that I obtained in decerebrate animals, indicated that the removal of the sympathetic nerves had a decided influence upon the lengthening and shortening reactions as described by Sherrington. The most striking effects were seen in animals which were decerebrated at long intervals after the removal of the sympathetic nerves. In these the lengthening and shortening reactions were practically absent. There was also a great diminution of reflex activity in the left lower limb. The position of extension, however, was periodically imposed on both lower limbs, but as soon as the extending factor ceased to operate, the left fell into a semi-flexed attitude and the right remained extended (see Figure II.). All the experiments I conducted, yielded constant results the factors in which were, I believe, the gradual removal of the brain until the correct level was reached, the adoption of the two-stage operation and the administration of intra-tracheal anaesthesia. When we consider the normal effect of carbon dioxide in respiration and the abnormal effect in asphyxia, the importance of efficient anaesthesia in accurate observation becomes apparent. In a number of experiments that I conducted, rigidity in extension was imposed on both lower limbs when the animal became in the least asphyxiated, even after the removal of the sympathetic nerves from the left side.



FIGURE II.  
Showing the effect of the division of the left abdominal sympathetic trunk in a decerebrate animal. (Taken from a cinematograph film.)



In all these experiments the resistance to passive change of position in the left lower limb was very much less than in the other limbs and the results suggested to me that it might be possible to effect a beneficial result in the rigidity accompanying spastic paralysis.

#### Sympathetic Ramisection and Its Results in the Human Subject.

Finality could only be reached by observing the effect of the removal of the sympathetic nerves in a definite spastic condition in a human subject. I therefore devised the operations of sympathetic ramisection. The first patient was suffering from spastic hemiplegia caused by a gun-shot wound of the left parietal region and the results obtained may be summarized as follows:

(i.) There was a definite diminution of rigidity. At first a joint such as the knee could be moved through a small range of movement without encountering resistance. This range gradually increased until movement through the whole range could be carried out without resistance.

(ii.) There was a diminution of reflex activity; knee jerks and ankle clonus became decreasingly smaller and less easily excitable. In this respect the first patient showed a more definite diminution than many subsequent patients suffering from similar trouble.

(iii.) There was a loss of tremor which before operation had affected the limb when a weight was imposed upon it. Fasciculation of the spastic muscles became less and less evident. This fasciculation appears in a number of conditions in association with tremor and although it escaped observation in the first patient before operation, it was probably present.

(iv.) There was an immediate and progressive gain in the control of voluntary movements.

(v.) Before operation the patient could not balance on his right lower limb, but after operation balance was restored. The simple explanation of this is that diminished rigidity enabled the patient to change position quickly, thus enabling changes in the centre of gravity to be counteracted by muscular action.

(vi.) Vasomotor changes also appeared after sympathetic ramisection. These were not as evident in the first patient as in many subsequent ones, but a change in temperature and colour of the limb followed the operation.

(vii.) There were also changes in the bowel condition which have been previously described.

Similar results were seen in a whole series of eight patients with gun-shot wounds of the cerebral cortex and in every lesion of the same type the results have been more or less consistent. Spastic paralysis can, however, be caused by lesions in other situations and the site and type of the lesion modify the result to be obtained by operation.

#### Experiment Results and Operative Findings Considered Together.

##### Spinal Lesions.

In the spinal animal the loss of cortical inhibition allows the spinal mechanism to carry on indepen-

dent action. The excitability of the cord gradually increases and the spinal cord can impose upon the animal a position which depends upon the spinal mechanism alone. Sensory impressions are easily reflected to cause the position of flexion to be maintained. It is true in experiment animals that the removal of the sympathetic nerves has an effect upon this position of flexion, but under appropriate stimuli flexion can be imposed upon the left lower limb as well as upon the right. The spinal animals did not live long enough for observations to be continued more than twenty-one days, but in every instance the position of flexion tended to reassert itself in the left lower limb even when the sympathetic nerves were removed. Thus the release of function in the spinal mechanisms can impose a position upon the animal which is not to any great extent influenced by the removal of the sympathetic nerves and this holds for clinical conditions also. The only condition in which the removal of the sympathetic nerves can have much effect in spinal lesions, is when there is enough cortical control to inhibit the excessive activity of these spinal centres. If, for example, lateral sclerosis has advanced to such an extent that cortical influence upon the spine is minimal, then the spinal mechanism is in control of the situation and while the sympathetic nerves may have an effect in lessening the reflex activity, there can be no substantial gain in the control or power of movement on account of the nature of the lesion. The position is more hopeless still if the lesion affects the anterior horn cells and in consequence muscular wasting is present. In lesions which are not progressive, such as changes in the cord following trauma, the result of ramisection will depend upon the amount of cortical control that is able to pass the pathological block in the spinal cord. It is not always easy to estimate how much control remains in the presence of rigidity affecting all groups of muscles, but the presence or absence of plastic tone will often be a determining factor. This will be discussed later.

##### Deficient Cortical Control.

The nervous mechanism of the decerebrate animal can impose the position of extension upon the animal in response to appropriate stimuli. The removal of the sympathetic nerves does not prevent the onset of extension in the left lower limb, although the position is not maintained when the stimulus ceases. The extending tendencies in decerebrate animals would probably be much more pronounced and constant if the release of function continued for a considerable time. In the human subject there are lesions which have clinical features similar to those seen in the decerebrate animal. For example, it is common to see mentally defective children in whom there is a constant extensor spasm associated with absence of cortical control, or in whom extension is imposed upon the body in response to any sensory stimulus. Two such patients were subjected to operation and while there were certain results observed, the tendency to go into extension was not inhibited to any appreciable degree. In these cases and similar ones, rigidity of extensor type is constant because of the release of function in sub-

cortical centres and the removal of the sympathetic nerves will have no beneficial result.

It should be clearly understood that decerebrate rigidity as seen in the animal preparations is characterized by this tendency to maintain the extended position and by the presence of lengthening and shortening reactions. The removal of the sympathetic influence modifies the lengthening and shortening reactions and to a certain extent depresses reflex activity, but does not prevent the onset of extension. In the human subject the release of function continues for such a long period that this tendency for extension to be imposed upon the subject may result in rigidity in extension as a constant phenomenon. The removal of the sympathetic nerve in such a case, therefore, can have little beneficial result.

#### *Defects in the Maintenance of Position.*

When considering cortical lesions we have to remember that the function of the cortex in regard to movement is that of enabling us to change the state of contraction in muscles or to change position. We have a clear cortical representation as regards the movement of groups of muscles, but we have not as clear a representation as regards the maintenance of position once attained as the result of voluntary action. Thus we are able to extend the neck as a voluntary action, but it remains more or less in the extended position without attention. Voluntary control can temporarily impose greater rigidity upon the neck muscles by causing active contraction, but the involuntary maintenance of posture does not appear to be directly under the influence of consciousness. Thus it appears that cortical inhibition can affect the mechanism for change of position much more accurately than it can the mechanism for maintaining position. When cortical control becomes defective, the release of function apparently affects both mechanisms and while the action of centres controlling the ordinary medullated nerves can be modified as long as any cortical control remains, the release of function in the sympathetic centres appears to be much less easily controllable. When a patient affected by a lesion of the cortex improves and voluntary control reappears, the voluntary movements are often obstructed by a rigidity affecting all groups of muscles. This was my original observation and as a result of clinical experience I have found that the removal of the sympathetic influence enables movement to be carried out much more accurately and enables cortical inhibition to be much more effective. The complete removal of sympathetic influence from a spastic limb does not appear to affect adversely the posture or voluntary movements because of two factors: (i.) The hyper-tonicity which still remains in the muscles as a result of hyper-excitability of the sub-cortical centres and (ii.) because of the cortical contribution to muscle tone. As a matter of clinical experience it appears that patients can impose a rigidity upon the musculature as a result of cortical influence alone and in the experiment animals when the sympathetic nerves were removed from otherwise normal animals, cor-

tical influence in response to the emotion of fear could maintain adequate posture of the left lower limb.

#### *The Correlation of Clinical Results in Cerebral Lesions.*

The effects following sympathetic ramisection for spastic paralysis caused by cerebral lesions indicate that the site of the lesion and the severity of the lesion considerably modify the results. In my experience spastic paralysis associated with gunshot wounds of the cortex invariably respond to treatment. Favourable results are also obtained in congenital hemiplegia and paraplegia. On the other hand lesions of the internal capsule and indefinite lesions associated with vascular changes are not so hopeful as regards recovery in the upper limb. The lower limb is much more automatic in action and it is very exceptional to find that improvement does not occur in spastic paralysis of cerebral origin, but in the upper limb movements of the hand demand such accurate control that recovery becomes a very difficult problem. A patient may re-learn to control the flexors of the fingers fairly well, but the intrinsic muscles of the hand and the extensors of the fingers usually do not return to control in these more or less indefinite lesions. It is clear, of course, that if a lesion of the internal capsule destroys a section of cortico-spinal connexions, return of function would never be possible. It is also evident that if cortico-spinal connexions are interfered with in any way, the tone arising from uninhibited sub-cortical centres could still impose a certain amount of rigidity upon these spastic limbs. The absence of a progressive lesion and the presence of a fair amount of cortical control are thus essential for the production of satisfactory results. The other main indication is that the rigidity which appears in the limbs, is plastic in type and due to the action of the sympathetic nerves.

#### *Contractile and Plastic Tone.*

Muscle tone is not easy to define. It is commonly described as a slight continuous contraction which keeps a muscle tense, so that when it contracts, slack has not to be taken up. That this definition does not apply in normal muscles can easily be demonstrated. There is slack in the patella tendon when the knee is supported in extension and even when supported in a considerable range of flexion. This slack has to be taken up by active contraction before a movement of the leg can occur. If the knee is completely flexed, slack can no longer be detected. It is also often stated that muscle tone causes the proximal end of a cut tendon to retract, but this is not true for a resting normal muscle excepting when the muscle is passively elongated. Under these circumstances mechanical factors could be responsible for the retraction of a tendon. Even in such an abnormal condition as decerebrate rigidity the cut tendon does not retract. To examine this the *tendo Achillis* in a decerebrate animal was divided while the animal was lying with the attachments of the plantar-flexing muscles approximated. No retraction occurred. Under normal conditions muscle tone appears to be only sufficient to prevent

slack in an elongated muscle. When the attachments of a resting muscle are approximated, the tone is not great enough to prevent the appearance of slack which has to be taken up before the muscle's normal action can be commenced.

When muscles become hypertonic, slack is less evident and appears in a much smaller range of movement. There are some conditions in which no slack at all appears. These are apparently when the active or passive movement is accompanied by exaggerated lengthening and shortening reactions. The clinical examination of one patient with spastic paraplegia following a gun-shot wound of the cortex illustrates this point. Both lower limbs were spastic, but the left was much more rigid than the right. The left was so rigid that when it was lifted as it lay in an extended position, the knee remained extended. When it was passively flexed at the knee, flexion persisted as a fixed position. When the knee was flexed and a knee jerk was elicited, a more extended position was imposed by the contraction of the *quadriceps* and the imposed position was retained by a shortening reaction in this muscle. The effect of a succession of knee jerks may be illustrated as in the accompanying figure. In this patient the knee jerk was comparatively easily excited, but the amplitude was not great. After sympathetic ramisection a certain degree of rigidity remained, but a striking change occurred. When the knee jerk was elicited in the flexed knee, the reflex response was much greater than before operation, but the knee fell immediately back to the flexed position. If the extended knee was lifted, extension was momentarily maintained, but the leg fell gradually into the flexed position. These changes were observed soon after operation and became more apparent daily.

When the presence of a double innervation of striated muscle became known, attempts were made to ascribe to the sympathetic nerves the function of presiding over muscle tone. In spite of certain experimental evidence the idea was rejected mainly because the removal of the sympathetic nerves failed to influence the development and maintenance of decerebrate rigidity. I have been able to show and have recorded elsewhere<sup>1</sup> that decerebrate rigidity as described by Sherrington does not appear after the removal of the sympathetic nerves. Though the tendency for extension to be imposed upon the animal still remains, lengthening and shortening reactions are less evident. It was the presence of these reactions that induced Sherrington to use the term "plastic tone" and to put forward the opinion that tone was a mechanism for the maintenance of posture. In decerebrate animals two factors

contribute to the characteristic action of the anti-gravitational muscles: (i.) Increased activity on the part of the centres controlling the medullated nerve tending to impose the position of extension and (ii.) the presence of lengthening and shortening reaction which tend to disappear when the sympathetic nerves are removed.

It seems appropriate, therefore, to speak of two elements in tone and to call them, as Langelan has suggested, contractile tone and plastic tone. In the case described above, contractile tone and plastic tone were both abnormal. The contractile tone was responsible for the easily excitable knee jerk which imposed each successive position, but the positions were maintained by the excessive plastic tone. That this plastic tone depends more or less upon the action of the sympathetic nerve I have been able to show experimentally and clinically. But the ability to maintain position does not depend absolutely upon the sympathetic nerve supply. In the case quoted the knee remained extended for an appreciable time after operation when the left lower limb was lifted. This was due to a reflex contraction of the *quadriceps* which occurred as soon as the weight of the leg began to extend the muscle. After this initial contraction, however, the ability of the *quadriceps* to maintain the extension was less than that seen before operation. There also appeared a definitely increasing range of movement in the knee joint through which passive movements could be done without encountering resistance.

This case is one which illustrated plastic tone admirably, but it is necessary to be able to determine whether plastic tone is excessive and is interfering with movement in less striking instances. The normal knee jerk is a reflex response depending upon the contractile tone of the *quadriceps* muscle, but can be shown to exhibit evidence of a shortening reaction apparently of sympathetic origin. Either of the elements in tone may be increased. Thus, if the contractile element be excessive, jerks of large amplitude and easy excitability may be present without much tendency for the position of extension to be maintained. Such reflex activity occurs in complete spinal lesions. On the other hand, the plastic element may be so increased that any position imposed by reflex or active contraction tends to be maintained and this apparently constitutes a large part of the disability of the spastic paralytic.

#### Clinical Test for Plastic Tone.

It is obvious that the main consideration in determining the suitability of a definite case for sympathetic ramisection will be the presence of plastic tone. From what has been said this may be judged by the presence or absence of lengthening and shortening reactions. In the ankle, for example, when the foot is passively pushed into dorsi-flexion, contractile tone will cause a reflex contraction in the dorsi-flexors of the foot as soon as the weight begins to elongate them when the foot is released. If plastic tone is increased, the foot slowly returns to plantar flexion, but if this element is not excessive, the foot drops quickly. When the habitual attitude of the foot has been plantar flexion, no degree of hypertonia is great enough to take up slack due to

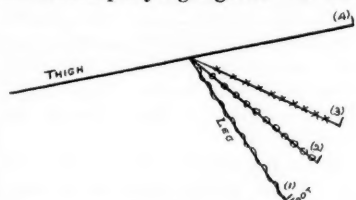


FIGURE III.  
Diagram of successive stages of knee-jerks.

<sup>1</sup>THE MEDICAL JOURNAL OF AUSTRALIA, January 26, 1924, page 77.



structural change in the dorsi-flexing muscles and the phenomena associated with excessive tone will only appear when the moving foot approaches the position of habitual posture. Even in the case quoted above the dorsi-flexing muscles of the ankle gave little indication of the abnormal tonic condition on account of structural lengthening from the habitual *equinus* deformity. Clonus and tremor depend upon the action of the centres controlling the medullated nerve and must not be taken as an evidence of plastic tone. In a complete spinal lesion, for example, an attempt to elicit a knee jerk may be followed by clonus in the extended knee, but this is evidence only of an increase in contractile tone. It is true, however, that this clonus becomes much less easily elicited after sympathetic ramisection and the tendency may disappear.

#### Summary of Indications for Operations.

The main indication for sympathetic ramisection is the presence of excessive plastic tone. The greatest benefit comes to those patients whose movements are obstructed by the tendency to maintain positions attained by active contraction. The second necessity is adequate cortical control. No beneficial result can be expected if the cortical areas concerned with the representation of movement or of the position of the limbs are destroyed. Similarly any process which effectively blocks cortical control, must constitute a contra-indication, since gain is a physical impossibility and the uninhibited activity of sub-cortical centres would so dominate the clinical picture that the mere removal of plastic tone would have little beneficial effect. Imbecility and some degrees of mental deficiency would render operative treatment a waste of time and energy. To justify surgical interference the lesion must not be progressive. This particularly applies to spinal conditions and more especially when the spinal lesion is accompanied by muscular wasting.

#### THE NERVOUS MECHANISM CONCERNED IN THE PRODUCTION OF PLASTIC TONUS.<sup>1</sup>

By JOHN I. HUNTER, M.D., Ch.M. (Sydney),  
Challis Professor of Anatomy, University of Sydney;  
Honorary Consulting Neurologist to the  
Lewisham Hospital, Sydney.

In 1896 Sherrington<sup>(1)</sup> described a condition of plasticity in the limbs of preparations exhibiting decerebrate rigidity. In dealing with this subject in detail in 1909 this author<sup>(2)</sup> showed that approximately the same weight was required to alter the degree of flexion of the knee no matter how elongated the fibres had previously been rendered by passive flexion. This aspect of tone enabled a position once assumed to be maintained after either lengthening ("lengthening reaction") or shortening of the muscle fibres ("shortening reaction") and the degree of its manifestation was independent of the length

of the muscle fibres of the muscle exhibiting the condition. Dr. Royle's human operations and experiments on goats<sup>(3)</sup> conclusively showed that this property was no longer present after removal by sympathetic ramisection of the influence of the sympathetic nerve supply of skeletal muscle. It has been previously argued,<sup>(4)(5)</sup> therefore, that the maintenance of plastic tone is a function of the sympathetic nervous system. This term is used in Langley's terminology, which is adopted here, to designate the system of neurones whose connexions with the cerebro-spinal axis are limited to the thoracolumbar region. It has long been known that the thickly medullated cerebro-spinal nerve fibres are not the only fibres which innervate voluntary muscle. Recent experiments have shown that the non-medullated fibres which end in grape-like terminations, are sympathetic in origin. For, as Agduhr<sup>(6)</sup> showed, removal of the appropriate sympathetic ganglion of the ganglionated trunk leads to degeneration of these fibres. The non-medullated fibres are therefore post-ganglionic; their cell-bodies lie in the sympathetic ganglia of the vertebral chain. Voluntary striated muscle, therefore, receives nerve-endings of the non-medullated axones of sympathetic nerve cells situated in the vertebral ganglia. The non-medullated sympathetic fibres join the somatic nerve fibres by way of the grey *rami communicantes*. Interruption of this pathway deprives the muscles affected of the property of plastic tone.

The sympathetic ganglia receive fibres by way of the white *rami communicantes* from the lateral column of grey matter found in the thoracolumbar region of the spinal medulla. Sensory fibres passing from the muscle through the posterior nerve roots in the thoracolumbar region complete a reflex arc. This may be shown by cutting the posterior nerve root of the first thoracic nerve in the domestic fowl. In most instances this is the first nerve caudal to the roots of origin of the brachial plexus, having no branch of communication with the plexus. When this arrangement is present, the operation of cutting its posterior nerve root will not interfere with the function of the somatic proprioceptive arcs. The result is depression and abduction of the wing in every way comparable to the condition produced by sectioning the sympathetic cord immediately caudal to the brachial plexus.<sup>(5)</sup> The function of plastic tone of the wing is maintained, therefore, by a proprioceptive reflex arc situated mainly at the level of the first thoracic segment.

Within the spinal medulla sympathetic commissural connexions are present; that is, afferent impulses from one limb affect the degree of plastic tone of the opposite limb. Furthermore intersegmental connexions take place. Dr. Royle's clinical results are evidence of these relationships. He has been able to show that sympathetic ramisection adopted to remove the increased plastic tonus which is present in some cases of spastic paralysis from one limb sometimes diminishes the degree of plastic tone in other limbs.

In mammals spinal centres alone are not adequate to maintain the normal degree of plastic tone pre-

<sup>1</sup> Read at a meeting of the New South Wales Branch of the British Medical Association on July 31, 1924.



sent in the voluntary musculature in the intact animal. Sherrington<sup>(2)</sup> showed that the spinal animal did not exhibit the "lengthening" and "shortening" reactions indicative of the presence of plastic tone immediately after spinal transection. The shortest period after which plastic tone appeared was in his experiments on dogs sixteen days. And in this case the property disappeared to return after one month from the time of operation. It is evident that pre-spinal centres are adjuvants to the spinal sympathetic centres concerned in the maintenance of plastic tone. In the decerebrate animal the plane of section of the brain-stem occupies a position between the cephalic limit of the interval between the anterior and the posterior colliculi and the caudal limit of the lateral vestibular nucleus of Deiters. It is in this preparation that increased plastic tonus is most constantly exhibited. In the phases of relaxation of the limbs which occur between the periods of rigidity which characterize the condition, the "lengthening" and "shortening" reactions are strikingly illustrated. During the periods of extensor or, as sometimes occurs in chronic preparations, flexor rigidity<sup>(7)</sup> plastic tone fixes the muscle fibres at the length necessary for the maintenance of the posture of the limbs. The position imposed upon the limbs is the result of the selective action upon certain groups of muscles of contractile tone. This is a function of the somatic innervation of voluntary muscle. Just as two efferent pathways connect the cerebro-spinal axis with voluntary muscle to subserve the two elements of tone, so the pre-spinal reflex pathways must also be double. The descending limb of the somatic arc which is responsible for the extensor attitude appears from Thiele's work<sup>(8)</sup> to be the vestibulo-spinal tract which originates in the nucleus of Deiters. It is suggested that the reticulo-spinal or ponto-spinal tracts subserve plastic tone. Further, Magnus and de Kleijn<sup>(9)</sup> have shown that labyrinthine and neck reflex connexions are capable of varying the degree of tone of the decerebrate preparation. Afferent pathways from the labyrinth and from the muscles of the neck therefore connect with the pre-spinal centres responsible for plastic and contractile tone. Afferent impulses traversing these pathways tend to compensate for the loss of plastic tone following sympathetic ramisection, as Langelaan<sup>(10)</sup> has shown in the case of the frog. I have found that the fowl's wing also tends to be less drooped and abducted week by week after the removal of its sympathetic innervation, until finally the normal position is attained during standing and walking. If the head be kept steady, however, or if the wing be fatigued by repeated stretching, drooping and abduction reappear.

Magnus<sup>(11)</sup> studied the result of section of the brain-stem of cats cephalic to the most cephalic plane which induces decerebrate rigidity. He thus produced the "mid-brain animal" and if the thalamus be left intact so that heat-regulation will not be impaired, the "thalamus animal." Walshe<sup>(12)</sup> gives the following summary of the properties of these two preparations:

Both animals possess tone of normal intensity; they can sit, stand, walk, run and jump and if overturned, they instantly right themselves. All the motor activities of the living animals are possible, but, since there is no volition, they have to be reflexly elicited. Auditory stimuli will make the animals run and jump. The sum total of the reflexes which make these numerous activities possible, persists unimpaired after ablation of the cerebellum. Therefore, the active adoption and maintenance of a variety of postures in conformity with reflex movements of the preparation which include movements of the type known as automatic and associated, are possible and are normally carried out by the animal without its fore-brain, without the participation of either cerebellum or *corpus striatum*. The possession of the mid-brain allows the animal actively and, of course, reflexly to regulate the position of its head in space and it is this capacity which enables it to maintain its equilibrium under all circumstances of movement.

It is obvious, then, that in the cat mid-brain centres control pre-spinal centres in the *pons* and *medulla oblongata* in the regulation of posture. Release of function accounts for the rigidity of musculature in decerebrate preparations, for in such preparations the cephalic part of the mid-brain is removed. In higher mammals it is probable from clinical evidence that the *corpus striatum* usurps the function of the mid-brain in the regulation of posture to a certain extent. In birds the *corpus striatum* has attained a relatively enormous importance. Following unilateral enucleation of this body in domestic fowls and seagulls I have found that plastic tone is greatly increased in both wings, though the degree is greater on the same than on the opposite side. Removal of the sympathetic innervation of the ipsi-lateral wing removes the plastic tone on this side and reduces the degree of plastic tone of the opposite wing to within normal limits. This is further evidence that impulses from one limb, by means of crossed spinal connexions, modify the degree of plastic tone in the opposite limb.

Warner and Olmsted<sup>(13)</sup> have recently brought evidence to show that a tract from the frontal lobe of the cerebral cortex when stimulated, inhibits decerebrate rigidity. This tract is cortico-ponto-cerebellar in its connexions. It passes from the frontal lobe through "the mesial part of the internal capsule and extends caudally past the level of the anterior *corpora quadrigemina*. It then, in the greater part at least, crosses to the other side of the brain-stem to enter the cerebellum by way of the middle cerebellar peduncle" (*loco citato*, page 198). The inhibitory area of the cerebellum is the anterior surface of the vermis as shown by Sherrington<sup>(14)</sup> and confirmed by Weed<sup>(15)</sup> and Miller and Banting.<sup>(16)</sup> This region therefore influences the pre-spinal centres concerned in the maintenance of tone, for stimulation of this area in the decerebrate animal causes relaxation of the rigidity. These connexions illustrate the interdependence of the *cortex cerebelli* and the cerebellum. Walshe<sup>(17)</sup> has claimed that the cerebellum is "the organ through which the cerebral motor cortex influences postural activities and regulates posture in the interests of

coordinated purposive movement." In this instance the cerebral cortex does not influence the pre-spinal centres directly, but through the intermediation of the cerebellum.

#### Acknowledgment.

The expenses of the experimental work to which reference is made in this paper, have been defrayed from the fund generously provided by George H. Bosch, Esquire, for research upon the organization of the human nervous system.

#### References.

- (1) C. S. Sherrington: "Cataleptoid Reflexes in the Monkey," *Proceedings of Royal Society of London*, 1896, Volume IX., page 411.
- (2) C. S. Sherrington: "On Plastic Tonus and Proprioceptive Reflexes," *Quarterly Journal of Experimental Physiology*, 1909, Volume II., page 109.
- (3) N. D. Royle: "A New Operative Procedure in the Treatment of Spastic Paralysis and its Experimental Basis," *THE MEDICAL JOURNAL OF AUSTRALIA*, January 26, 1924, page 77.
- (4) J. I. Hunter: "The Postural Influence of the Sympathetic Innervation of Voluntary Muscle," *THE MEDICAL JOURNAL OF AUSTRALIA*, January 26, 1924, page 86.
- (5) J. I. Hunter: "The Significance of the Double Innervation of Voluntary Muscle Illustrated by Reference to the Maintenance of the Posture of the Wing," *THE MEDICAL JOURNAL OF AUSTRALIA*, June 14, 1924, page 582.
- (6) E. Agduhr: "Are the Cross-Striated Muscle Fibres of the Extremities also Innervated Sympathetically?" *Proceedings Koninklijke Akademie van Wetenschappen Te Amsterdam*, 1919, page 930.
- (7) H. C. Bazett and W. G. Penfield: "A Study of the Sherrington Decerebrate Animal in the Chronic as well as the Acute Condition," *Brain*, 1922, Volume xlv., Part II., page 185.
- (8) F. H. Thiele: "On the Efferent Relationship of the Optic Thalamus and Deiters's Nucleus to the Spinal Cord, with Special Reference to the Cerebellar Influx of Dr. Hughlings Jackson and the Genesis of the Decerebrate Rigidity of Ord and Sherrington," *Journal of Physiology*, 1905, Volume XXXII., page 358.
- (9) R. Magnus and A. Kleijn: "Die Abhängigkeit des Tonus der Extremitätenmuskeln von der Kopfstellung," *Archiv für die gesammte Physiologie*, 1912, CXLV., Seite 455 (quoted by Walshe<sup>(12)</sup>).
- (10) J. W. Langelaan: "On Muscle Tone," *Brain*, 1922, Volume XLV., page 434.
- (11) R. Magnus: "Beiträge zum Problem der Körperstellung: I. Stellreflex beim Zwischenhirn und Mittelhirnkaninchen," *Archiv für die gesammte Physiologie*, 1916, CLXIII., Seite 405 (quoted by Walshe<sup>(12)</sup>).
- (12) F. M. R. Walshe: "Decerebrate Rigidity and its Recognition in Man," *Proceedings of the Royal Society of Medicine (Section of Neurology)*, 1922, Volume XV., page 41.
- (13) W. P. Warner and J. M. D. Olmsted: "The Influence of the Cerebrum and Cerebellum on Extensor Rigidity," *Brain*, 1923, Volume XLV., Part II., page 189.
- (14) C. S. Sherrington: Schäfer's "Textbook of Physiology," 1898, Volume II., page 908.
- (15) Lewis H. Weed: "Observation Upon Decerebrate Rigidity," *Journal of Physiology*, 1914, Volume XLVIII., page 205.
- (16) F. R. Miller and F. G. Banting: "Observations on Cerebellar Stimulation," *Brain*, 1922, Volume XLV., page 104.
- (17) F. M. R. Walshe: "On Disorders of Movement Resulting from Loss of Postural Tone, with Special Reference to Cerebellar Ataxy," *Brain*, 1921, Volume XLIV., page 539.

#### A FURTHER PROGRESS REPORT ON THE HEALTH PROGRAMME OF HALIFAX AND DARTMOUTH.<sup>1</sup>

By B. FRANKLYN ROYER, M.D., D.Sc.,  
Fellow A.P.H.A.,

Formerly Executive Officer, Massachusetts-Halifax  
Health Commission and Director of Public  
Health Nursing, Dalhousie University.

IN a progress report published in this journal, June 23, 1923, the results of three years' work, a little more than two of which was done with a fairly full staff, were portrayed graphically and it was pointed out that in Halifax the infant mortality had declined from an average of 187.5 per thousand babies born alive to 97.5 and the general mortality from 20.2 to 14.3 per thousand population. Also that an equally significant showing had been made in Dartmouth.

The fourth year of work was performed with about the same staff that had been carrying on during the latter half of the third year, a few more nurses and visiting housekeepers being added, permitted a larger number of home instruction visits to be made.

The fourth year of work started out in October, 1922, very satisfactorily. The winter set in very early, a large amount of unemployment was noticeable during the early part of the winter and during the months of February and March, 1923, the evil consequences were showing and the death rates were tremendously high, especially from respiratory diseases.

The end of June was reached, however, with but eleven more deaths occurring in the City of Halifax than were recorded during the corresponding nine months of the preceding statistical year.

Had normal population increase occurred, this would not have raised the crude death rate. The deaths of babies under one year of age reached a total of 160 as against 165 deaths during the corresponding nine months of the preceding year.

It also happened that fewer births were recorded during these nine months than for the corresponding nine months of the preceding year, probably in part due to the fact that the preceding years included the increased number of births following the return home of so many soldiers.

On July 1 it looked hopeful that the slight increase in numbers of deaths at all ages in Halifax would be more than saved before the end of the statistical year, September 30, 1923.

During the summer months, some time late in July and running through August and September, the peak apparently being reached in August, an outbreak of diarrheal disease occurred that spoiled the year's record. During these three months deaths

<sup>1</sup> Published by the courtesy and with the permission of the Massachusetts-Halifax Health Commission.

TABLE I.—DEATHS IN HALIFAX DURING THE SUMMERS, 1922 AND 1923.

Number of Deaths.	1922.				1923.				Increase.
	July.	August.	September.	Three Months.	July.	August.	September.	Three Months.	
All ages ..	39	41	55	115	59	76	62	199	84
Infants ..	10	8	11	29	9	21	18	48	19

from all causes in Halifax increased eighty-four and infant deaths nineteen.

In the progress report referred to comment was made about apportioning the credit for the satisfactory decline in infant mortality and in the crude death rates for Halifax. At that time it was felt that one-half the credit for the decline should be given to the official agencies and one-half to the newer type of public health education in the home and from the health centres.

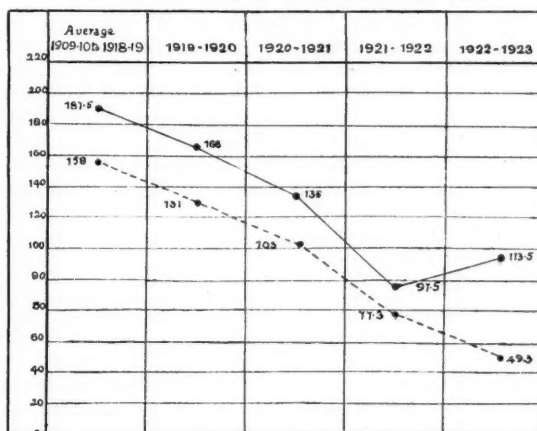
The writer resigned his position of Executive Officer in July. No opportunity was, therefore, afforded him to determine the exact cause of the diarrhoeal outbreak and the increased loss of life incident to it. From correspondence it would appear that no investigation of this outbreak has been undertaken by the official city bodies or by the Commission.

In the absence of an official investigation and report, therefore, it seems fair to assume that the outbreak of diarrhoeal disease, a strictly preventable affection, was due to failure on the part of some of the official agencies to do those things which prevent diarrhoeal diseases and that the fault lay with water, milk or with food supplies that might have been polluted, if the fly-breeding ordinance was not strictly enforced. No such outbreak affected Dartmouth.

It must be remembered that accidental pollution of an exposed public water supply might occur at any time and that any community is dependent in

GRAPH II.

INFANT MORTALITY, HALIFAX AND DARTMOUTH.



Continuous line = Halifax. Broken line = Dartmouth.

large measure upon the faithfulness of officials to do continuously and efficiently those things which protect human life. The chain of protection is weak where subordinates are weak, careless or are not held to a strict accounting.

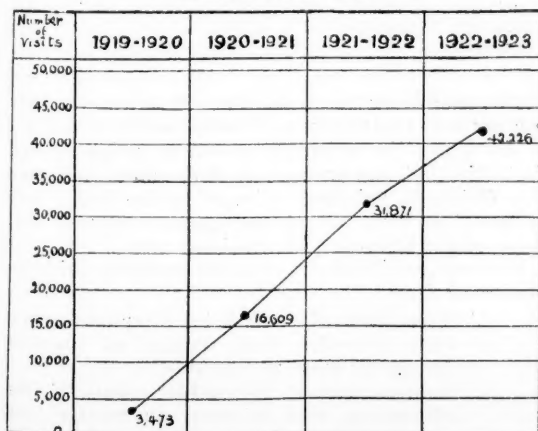
Dartmouth has had a notable drop in infant death rates. Here are two Victorian Order district nurses and two full home health teachers to a population just above eight thousand souls, one public nurse to two thousand.

The increase in home instruction visits by public health nurses and visiting housekeepers is best shown in graphic form by years. It is of considerable interest to note the decline in infant mortality in Halifax and Dartmouth as the home instruction visits in these communities increased. About 75,000 of these home instruction visits were in Halifax alone.

The Massachusetts-Halifax health demonstration has clearly shown the way for a saving of three hundred and sixty-five lives a year in a population a little less than seventy thousand living in the area affected by the great explosion. It has proven that in communities, tremendously well satisfied, bound down by tradition and slow to make change, by methods of intensive public health education work, the sickness rate and death rate may be brought so low, the figures alone will convince the most apathetic, that (to paraphrase the late Dr. Biggs) public health is purchasable and within certain natural limitations each community may determine its own death rate.

GRAPH I.

HOME INSTRUCTION VISITS, MASSACHUSETTS-HALIFAX HEALTH COMMISSION.





## THE TREATMENT OF TUBERCULOUS ABSCESES.

By HUGH C. TRUMBLE, M.C., M.B., B.S. (Melb.),  
F.R.C.S. (Eng.).

Honorary Surgeon, Austin Hospital for Incurables,  
Honorary Surgeon to Out-Patients, Alfred  
Hospital, Melbourne.

"To open and drain a cold abscess is to commit a surgical crime."—G. R. Girdlestone.<sup>(1)</sup>

"Ouvrir les tuberculoses, c'est ouvrir une porte par laquelle la mort peut entrer." Thus Calot, quoted by H. von Baeyer.<sup>(2)</sup>

The authorities mentioned have evidently no doubts as to the inadvisability of the use of the knife in the treatment of cold abscesses. On the other hand, some surgeons advise incision in selected cases, followed by careful suturing after evacuation, for example, Taylor,<sup>(3)</sup> Da Costa.<sup>(4)</sup>

Mr. R. Hamilton Russell,<sup>(5)</sup> dealing with diseases of the hip, goes further still, advocating drainage. He writes:

The principles of treatment which I believe to be the best are as follows:

- (i.) The evacuation of the pus collection;
- (ii.) The substitution for the abscess of a sinus, the shortest and most direct possible, from the disease to the surface;
- (iii.) Careful dressing of the sinus till it heals.

How should one treat a tuberculous abscess? Authorities do not agree. To settle the question for myself, I have studied the results following on the institution of various methods of treatment. It is a dismal tale that I have to tell. I tell it, however, in the hope that the adoption of the management which I later recommend, may change one of the darkest fields in surgery into one of the brightest.

I have confined my observations to cases of hip joint or spinal tuberculosis in which a cold abscess had developed. The remarks apply, however, to abscesses in any situation. The first part of the paper deals with two series of cases, one of thirty-four patients admitted to the Melbourne and Alfred Hospitals during the years 1919 to 1922; and a second, of thirteen cases in the wards of the Austin Hospital early in 1924.

In the second portion of the paper, I record a series of cases treated by myself or under my direction, mainly at the Austin Hospital for Incurables.

## Part I.

Thirty-four patients were admitted during the period under consideration to the wards of the Alfred and Melbourne Hospitals with cold abscess complicating either spinal or hip joint disease. The number of abscesses treated was forty-two. Some of the records are not complete, but as nearly as possible the following figures are accurate:

Method of Treatment.	Number of Abscesses.	Number of Sinuses Resulting.
Spontaneous rupture .. .. .	4	4
Incision and drainage .. .. .	5	5
Incision and closure .. .. .	14	14
Incision, closure (?) .. .. .	9	8
Aspiration .. .. .	10	6

In all cases included under the headings of spontaneous rupture, incision and drainage and incision and closure a sinus resulted. The fourth group comprises those cases in which the abscess was incised, but no statement was made as to whether or not the incision was closed. In one record in this group it is not stated whether a sinus resulted or not. Ten abscesses were aspirated, sinuses following in six. There is no mention of a sinus in the remaining four.

Early in 1924 I wrote to each of the thirty-four patients. I have traced only nineteen. Eleven of them are dead. Eight are living. Of these after an average period of four years five still have discharging sinuses, whilst three have none.

Analysing these figures, one finds that whether the abscess burst, was opened and drained or was incised and closed, the result was in 100% of cases sinus formation. As regards the technique of evacuation and closure, I need not say more than that the surgeons responsible were seventeen in number and among the best in Melbourne, so that there could be no question of any individual fault in performance. Much suture material might have been saved without any obvious disadvantage to the patient. Ten abscesses were aspirated, sinuses resulting in six of the cases. A group of four remains, concerning which the absence of any mention of a sinus brings the first sign of hope.

Mr. R. Hamilton Russell in his paper, definitely advocates the formation of a sinus. Why, then, should one try to avoid it? Eleven patients out of nineteen of whom after about four years news could be obtained, are dead. The silence of the fifteen is ominous.

Early in 1924 in the wards of the Austin Hospital were thirteen patients with spinal and hip joint tuberculosis and complicating sinuses. Eighteen abscesses in all had formed which, prior to admission, were treated as follows:

Method of Treatment.	Number of Abscesses.	Number of Sinuses Resulting.
Spontaneous rupture .. .. .	2	2
Incision and drainage .. .. .	4	4
Incision and closure .. .. .	6	6
Incision, closure (?) .. .. .	3	3
Aspiration .. .. .	3	2

The results are as in the former series. In only one patient, treated by aspiration, did a sinus fail to develop. An examination of the urine showed that albumin was present in five, whilst the liver was definitely enlarged (almost to the umbilicus) in two of the cases. Since the figures were obtained, three of the thirteen patients have died.

It seems justifiable to conclude from the evidence presented that:

- (i.) Sinus formation, with its attendant secondary infection and danger of amyloid disease, is most undesirable.
- (ii.) Sinuses almost inevitably result if the abscess be once opened, no matter how carefully the incision may be closed.



- (iii.) Aspiration holds out some hope of avoiding the formation of a sinus.

# Part II.

The abscesses occurring in this series were treated by aspiration, performed after the methods of Calot. The reader is referred to his "Indispensable Orthopædics" for details. One point only may be mentioned here. I have heard surgeons object that in many cases the pus cannot be withdrawn through a moderately large needle; that particles of *débris* block the canal. This often is the case at the first aspiration, seldom at the subsequent attempts. Instead of introducing a large bore needle which is extremely likely to give rise to a sinus, I adopt the following procedure. A needle (No. 13 or No. 14 Mayer-Meltzer) is introduced into the abscess cavity. A thin copper wire is closely wound round the stylette of the needle, about ten turns. The wire is removed from the stylette and its ends are pulled apart, thus opening out the coiled wire into a long cork-screw like spiral which slips easily into the needle. The spiral is agitated rapidly by alternately moving it a couple of centimetres in and out along the needle, the distal end just projecting beyond the point of the needle, that is into the abscess. Relatively to the bore of the needle the diameter of the wire is small, but by virtue of its spiral form it clears the canal of solid matter, whilst leaving room for the flow of fluid which is thus, as it were, filtered off from the solids floating in the cavity. Patience is necessary. It may take an hour to empty a large abscess, but to evacuate the collection without making a large puncture is essential. The results fully justify the expenditure of time and care. At the second attempt a syringe will probably draw off the fluid without any trouble.

The number of cases I have to record is small. Few patients develop abscesses whilst in hospital and still fewer reach hospital with an abscess unopened. Sinuses are common, abscesses rare in the wards of the Austin Hospital. I may mention at once that I have had no success with two types of patient. Firstly, the patient with multiple foci and abscesses, in whom there is obviously a condition approaching a disseminated tuberculosis with a rapid course terminating in death. Abscesses in such cases tend to perforate whatever may be done. Here the general treatment has failed to check the progress of the disease and local treatment is useless. Secondly, the patient in whom, although the general condition may be fair, a second abscess develops in connexion with a focus down to which a sinus already leads, that is a secondarily infected focus. Such abscesses may be opened forthwith.

It goes without saying that the general treatment of tuberculosis and careful orthopædic measures must never be neglected. The abscess is merely a complication of a disease and its treatment a part only of the more comprehensive management of the case.

Eight abscesses, occurring in eight patients, have been treated. In two prior to admission abscesses had formed, had been incised, the contents being

evacuated and the incision closed. In each case a sinus had resulted. It seems reasonable to suppose that in each of these patients the focus and therefore the second abscess forming in connexion therewith, was secondarily infected and that in reality I had to deal with a pyogenic abscess in each case. Sinus formation followed soon after aspiration in both, as was to be expected. In similar circumstances in future I shall open and drain the collection, but I hope that it may become increasingly rare to be forced into so doing.

In the remaining six cases the field was clear.

The first of these was that of a boy, aged ten years, with hip disease. He developed an abscess on the outer aspect of the thigh in January, 1923. Aspiration was performed on six occasions, after which no more fluid collected for many months. A plaster was applied and the boy allowed up. Whilst still in the plaster, the abscess reformed and unfortunately burst before it was detected (April, 1924). Had it been noted, I am sure that further aspiration would have prevented this catastrophe. The sinus continues to discharge. The boy had not complained of pain in the region. It is necessary, in order to avoid such accidents, to be continually watchful.

Another boy, aged sixteen years, in July, 1923, developed a cold abscess in the lumbar region. This was aspirated once, a few cubic centimetres of pus being drawn off, after which there was no further collection until June, 1924. Again aspiration was performed and Calot's fluid injected; now he has no sinus and no detectable abscess.

A third youth, aged nineteen years, was admitted with caries of the third and fourth lumbar vertebrae and a large left psoas abscess. This was aspirated with some trouble on April 4, 8 and 15, 1924, ninety, one hundred and twenty and two hundred and ten cubic centimetres of pus being withdrawn and ten cubic centimetres of Calot's fluid injected on the respective occasions. During the last four months there has been no re-filling of the abscess cavity and no sinus has formed.

A male, aged twenty-three years, with hip disease, developed an abscess in March, 1924. On the first occasion only one cubic centimetre of pus was aspirated and five cubic centimetres of Calot's fluid were injected. On the second occasion I used a very large needle and managed to obtain more pus. More Calot's fluid was injected. The use of this large needle almost proved disastrous, because the abscess discharged itself several times along the track left by it. Happily it healed after a month and has remained healed now for four months. I have learnt, however, never to resort to the use of a larger needle, but to use the method already detailed.

A female, aged twenty-eight years, was admitted with lumbar caries and a right psoas abscess. Treatment was commenced on July 22. Great difficulty was experienced in withdrawing the pus, but by means of the method described above, fifty cubic centimetres, fifteen cubic centimetres, sixty cubic centimetres and one hundred cubic centimetres approximately were evacuated on July 22 and 29 and August 1 and 5 respectively. Calot's fluid was injected at each sitting and the pus has become progressively more fluid and easier to extract. No sinus has formed. The patient is still under treatment.

Lastly, a female, aged twenty-one years, in August, 1923, came to the out-patient department at the Alfred Hospital complaining of a swelling over a rib. The swelling proved to be a cold abscess. This was aspirated on two occasions, after which there was no further formation of pus and no sinus.

I have failed in my object, that is the avoidance of sinus formation, in four out of eight cases treated. In two with existing sinuses, I think that failure for reasons already detailed, was unavoidable. One abscess burst under cover of a plaster before it was detected, another discharged along the track

left after the use of too large a needle, but has remained healed now for some months. Thus, in the treatment of six uncomplicated cases I have been successful in four or 66% and feel that with better technique, I should have raised the figure to 100%.

I conclude, then, that the best principles of treatment of tuberculous abscesses are as follows:

- (i.) Efficient general treatment of tuberculosis;
- (ii.) Skilful orthopaedic measures to insure rest to the affected part;
- (iii.) Aspiration of the abscess after the methods of Calot.

#### Acknowledgments.

I wish to thank the Superintendent of the Austin Hospital, Dr. Walker and Dr. Godbehear, for the help they have given me in the collection of histories and the treatment of patients.

#### References.

- <sup>(1)</sup> G. R. Girdlestone: "Treatment of Tuberculosis of Bones and Joints," *The British Medical Journal*, June 14, 1924, page 1044.
- <sup>(2)</sup> H. v. Baeyer: "*Lehrbuch der Orthopädie*," Seite 367 (Fritz Lange).
- <sup>(3)</sup> R. T. Taylor: "Surgery of the Spine and Extremities," page 176.
- <sup>(4)</sup> Da Costa: "Modern Surgery," page 268.
- <sup>(5)</sup> R. Hamilton Russell: "On Hip Disease," *Intercolonial Medical Journal*, June 20, 1904.

### Reports of Cases.

#### HYSTERIFORM FITS AND REGRESSION OF THE AFFECT IN A CASE OF ENCEPHALITIS LETHARGICA.<sup>1</sup>

By CLIFFORD HENRY, M.B., Ch.M., D.P. (Sydney),  
Senior Resident Medical Officer, Kenmore Mental Hospital,  
New South Wales.

THE following history was given by the parents of the patient.

A.B. was a healthy, active boy up to the end of June, 1921, and was considered the cleverest in his school. He was cheerful and bright and fond of all sports. Early in June, 1921, according to his own account, he was buried up to the neck by a fall of earth in a mine and was very frightened. A few days later a boy hit him on the head with a stone and he became unconscious. These two statements could not be absolutely verified, but the parents consider that they were true. Late in June he complained of pain in the back and headache. He slept under a tree and said he "saw two things." He was treated for influenza and in the second week his temperature rose to 38.8° C. (102° F.) and kept about 38.3° (101° F.) for another fortnight. In the first week his pulse rate was between 90 and 115. In the second week, it dropped to from 50 to 55 and remained so for another few weeks. All the time he complained of double vision and at times was quite blind. He slept continuously night and day, had to be shaken awake to take food and fell asleep again at once.

On July 30 (after a month in bed at home) he was sent to hospital and for a few days it was thought that he was

suffering from typhoid fever and then from a cerebro-spinal affection. He slept continuously there for two weeks and his breath was very foul. He was then taken home and after six weeks in bed there was allowed up.

In December, 1921, he went to High School, but was very "heavy and doxy." The boys called him "dreamy" and gave him a bad time. This upset him and in June, 1923, rather than go back to school, he ran away for three days.

He continually complained of pain in his back and legs and one Friday in October, 1923, he had a fit lasting forty minutes. From then until the next Monday, he went out of one convulsion into another. He "grabbed his head" and gave a spring off the bed on to the floor. The contractions were violent for a few minutes. Then he was quiet for a few minutes and started off again. On that Monday sixty cubic centimetres of clear fluid were withdrawn by lumbar puncture, the fluid squirting out over the basin on to the floor. From then on, the fits lessened in number and severity, but his temperament seemed to change and if crossed about anything, he would run and run until he dropped exhausted. He had a mild fit when he was annoyed and behaved like a spoiled young child. Any little thing would send him off. One evening a boy flicked his towel at him and it was two hours before he became quiet. He wanted everything he saw and cried for it.

In January, 1924, he had an attack of severe convulsions, but from then on he improved and he was given employment at a wireless telegraphy plant. He became very interested in the work and had only two slight fits in three months, although after any excitement, such as picture shows, he would scream out at night. One evening, after he had been refused permission to go to "pictures," he became very excited and resistive and ran away to a lagoon. After this he was quite unmanageable. He fought everyone and had fits until his admission to Kenmore Mental Hospital in April, 1924. On admission he appeared a well developed boy of fifteen, answered intelligently, but was in a very "emotional" state—cried when told to go back to his ward and argued at length when asked to do anything.

A physical examination revealed absolutely nothing abnormal except slightly irregular heart action, with occasional reduplication of the pulmonary second sound and some dilatation of the pupils. Dr. Temple Smith reported that there was no fundal change and so sign of past or present neuritis. During each of the first three evenings after admission he had a fit about 8 p.m. He had not had a fit during the day for some months.

An attendant reported as follows:

"He has an absolute premonition of a seizure and knows from his respiration the severity of the fit to expect. If given a bar to grasp with both hands, he can sometimes fight it off when about to occur, straining every muscle in the endeavour. The first night he had four convulsions and next night seven, during his seizure. He told me two minutes before them that he expected them to be more severe and they were, too. He said there were sounds like a large clock ticking—one long and one short sound—and headache usually. The first sign of a seizure is an intermittent heart beat—missing one in three or four—thence a feeling to his brain and lastly through the limbs to his fingers and toes, although once it began in his left buttock and ran down to his toes which became cramped for two or three minutes. In a seizure, he raises himself up bodily, resting on head and heels, lying on his back, body arched and knees bent. Then he throws himself on to either side with great force, then back to the former position and repeats this several times, finally relaxing as if exhausted. He then opens his eyes which have been tightly closed, and commences conversing quite intelligently and without any hesitation about the nature of the seizure through which he has just passed and how it affected him. There is no heavy breathing and no twitching of the eyes. He will say 'the attack has passed' and crack a few jokes and then go off to sleep peacefully until morning. There is instantaneous consciousness after the attack and no after-effects, except the heavy perspiring through exertion. The patient stated that before the fits

<sup>1</sup>Read at a meeting of the Section of Neurology and Psychiatry of the New South Wales Branch of the British Medical Association on August 22, 1924.

he is always sleepy and tired and throughout the fit can hear people talking, but does not know what they say."

On August 6, 1924, he was in good physical health, working intelligently and well with the engineer and had had no fits since the third night after admission in April. He was still inclined to argue immoderately and became depressed when refused unreasonable requests, but otherwise was normal in temperament and behaviour for a boy of his age.

Two outstanding features present themselves: the nature of the fits and the regression of the affect to an infantile condition.

With regard to the "fits" it is to be noted that they always coincided with some conditions in which he might have considered it to his advantage to have them.

They first appeared at a time when he was the subject of severe conflict at school; he had to obey his parents in going to school, but the boys there gave him a bad time. Were they an unconscious effort at self-protection to avoid being sent to school? They ceased almost completely when he left school to go to work which interested him and at which he was among older and more considerate companions. He also had severe fits on admission to hospital, where he was very discontented at first and may have thought that they would win him sympathy and indulgences. As soon as he became settled they ceased completely. Against the theory that they were hysteriform in nature is the nature of the convulsion. Here we have a condition of cranial inflammation and irritation in which opisthotonos might be expected among other phenomena. It is an attitude which would not readily suggest itself to the mind of a country boy of fifteen and yet his tetanic spasm caused him to assume it.

I suggest the explanation that the physical condition of his neurones, owing to the encephalitis, was an irritable condition favourable to the manifestations described above and only needed the appropriate psychic stimulus to produce them, but I cannot believe that either in this case or in any other, psychic stimuli alone can produce reactions similar to those known in some cases to be produced by purely physical factors. I believe that psychic manifestations of all kinds, normal and abnormal, depend directly and absolutely on the then existing physical condition of the appropriate neurones.

With regard to the regression of the affect to a primitive state in this case, every observer has noted that "temperament" changes are a common sequel to *encephalitis lethargica*. In this case there is clearly an example of the law that the higher mental qualities latest acquired are the first to go under the strain of unfavourable conditions.

The patient's conduct showed regression to the infantile state when: (i.) Everything desired was cried for until obtained, (ii.) authority was either fiercely resented or boldly defied, (iii.) control over instinctive actions was wanting.

The usual explanation is that "higher cortical control over the lower thalamic activities is either abolished or diminished." My criticism of this statement is that no one has yet advanced any theory as to how or where this interference takes place. Granted that a cortico-thalamic tract conveying impulses of control exists, no one has explained how, where or why its influence is interfered with. It seems difficult to believe that the toxins in *encephalitis lethargica* should pick out the particular synapses of this one tract. An explanation which seems more reasonable has suggested itself to me; two facts seem established: (1.) That the site of the lesion is in the neighbourhood of the walls of the third ventricle; (2.) that the thalamic region is the site of the affect.

Following this out, we have an inflammatory condition of part of the thalamus. Inflammation implies irritation of the locality and surroundings both at the height of the infection and later due to the damage done. We may therefore expect to find the chief affective centres in a state of irritability, hypersensitive to affective disturbances. The cortical control acquired since infancy is now not sufficiently powerful to exercise sufficient influence over the hypersensitive cells and regression to the uncontrolled infantile condition of the affect is a result.

I have to thank the Inspector-General of Mental Hospitals of New South Wales for his permission to publish these notes.

# PRIMARY CARCINOMA OF THE APPENDIX.

By P. E. WALTON SMITH, M.B. (Sydney),  
M.R.C.P. (London).

Honorary Pathologist, Royal North Shore Hospital,  
Sydney.

THE patient, Mrs. K.S., *etatis* twenty-six years, was admitted to the Royal North Shore Hospital on March 30, 1924, with the diagnosis of acute appendicitis.

She had had one pregnancy six years ago, one miscarriage two years later after which she was curetted. She was informed that she had misplacement of the uterus.

The present illness began fourteen days before admission (March 14), when she was seized with a sharp, stabbing pain in the right side of the abdomen. The pain lessened, but became much worse on March 29. There was no vomiting.

On admission the temperature was normal and the pulse rate 80. On the next day the temperature rose to 37.5° C. (99.5° F.) and the pulse 112. The patient complained of tenderness over the lower part of the abdomen on both sides.

The uterus was found to be retroverted and there was tenderness in the fornices.

Dr. Clarence Read operated on April 8, 1924. The uterus was first curetted and the scraping removed for histological examination. Subsequent microscopical examination showed a condition of proliferative endometritis. The abdomen was then opened by a medial incision and an inflamed, thickened, nodular appendix was found. This was removed and the stump invaginated. The uterus was freed from posterior adhesions and suspended; the abdomen was then closed. The patient made an uninterrupted recovery.

Naked eye examination of the removed appendix confirmed the points already noted at the time of operation. There was definite congestion, considerable thickening throughout its length and the serous surface was studded with about a dozen pin-head nodules suggesting the possibility of tuberculosis. One nodule situated about the junction of the distal and middle thirds was considerably larger than any of the others.

Sections were taken at various levels and examination of these proved that the appendix was the seat of an extensive chronic inflammatory process. There was a distinct proliferation of fibrous tissue in the sub-mucous and serous coats and in the latter at intervals this had resulted in the formation of the small nodules visible to the naked eye; the lumen was narrowed, in addition sub-acute inflammation was present, evidenced by hyperæmia and the presence of inflammatory products in the lumen.

Histological examination of the large nodule disclosed the presence of an epithelial new growth the origin of which could be traced to the glandular tissue of the mucous membrane, thus proving it to be a primary carcinoma of the appendix. The infiltration was most noticeable in the sub-mucous and sub-serous coats, only a small portion of the muscle being involved. The growth had almost obliterated the lumen of the appendix; although the infiltration had extended as far as the serous surface, there was no evidence of malignant disease in the mesentery.

In structure the tumour was seen to be composed of clumps of epithelial cells arranged in solid columns in a stroma of fibrous tissue which had undergone considerable proliferation, giving the typical appearance of a scirrhus carcinoma.

An excellent account of the condition is to be found in Ewing's "Neoplastic Diseases" in which it is stated that carcinoma of the appendix is of commoner occurrence than is usually thought, about two hundred cases having been reported.<sup>(1)</sup>

"Its importance was first suitably emphasized in 1903 by Elting and by Moschowitz. It is interesting to note how the recorded cases of this form of carcinoma have increased in proportion to the attention devoted to it."



The growth is most commonly found near the tip; it is usually small and may easily be missed unless the appendix is slit open or its presence may only be discovered on microscopical examination. It is usually associated with chronic appendicitis. Two types of growth are described. The first is an adeno-carcinoma occurring in persons over fifty and having the same malignancy as growths of similar structure originating in other parts of the alimentary tract; the second type is found at a much earlier age, commonly in the third decade, but even in children. It is usually benign; in structure it may resemble a basal-celled carcinoma or a scirrhus.

The case under consideration belongs to the second type, a carcinoma of a scirrhus nature developing at an early age (third decade) in an appendix which was the seat of chronic inflammation. The growth is, therefore, probably benign and the prognosis is good.

"The occurrence of a specific type of carcinoma in an atrophying organ which is often the seat of chronic inflammatory changes, is of much theoretical interest and its peculiar structure and benign course serve to emphasize the principle that each organ has its own form of carcinoma" (Ewing).

I am indebted to Dr. Clarence Read, Honorary Surgeon to the Royal North Shore Hospital, for permission to publish the case.

#### References.

(1) "Neoplastic Diseases," by James Ewing, A.M., M.D., Sc.D., 1922 Edition.

### Reviews.

#### ANÆSTHESIA.

In the preface of his book entitled "The Science and Art of Anesthesia" Professor Webster announces that it has been written with the object of helping the student or practitioner who gives only an occasional anæsthetic.<sup>1</sup> The subject of anæsthesia has been reviewed in all its aspects and there is a very interesting introductory chapter on the history of this branch of medicine.

In some portions of the book a knowledge of anæsthesia by the reader beyond that held by those for whom the book is chiefly written, is presumed, while in other parts a little amplification would be welcome.

In dealing with each anæsthetic agent the administration is described, but little is said about the maintenance of anæsthesia or management of the patient during the operation. For instance, he teaches that ether should be given with plenty of air, in abdominal operations and the author goes on to state that in certain types ether will invariably be found more satisfactory if given with oxygen, but no mention is made of the various methods that may be adopted to insure a clear air-way.

Throughout the book the reader is impressed with the fact that in America anæsthetists use oxygen together with the different anæsthetic agents to a far greater extent than is done in Australia.

It is pleasing to agree with the author in opposition to other writers that light anæsthesia does not increase the liability to shock and that it is advisable to keep patients without loss of eye reflexes if possible.

While being dogmatic on contentious points, the author has not written in an aggressive style and so the book makes most interesting reading. Those portions in which fuller details are desired, should either stimulate thought or cause the reader to consult larger works.

#### GONORRHOEA IN WOMEN.

CHIEFLY as a result of experience gained during the war, the study of gonorrhœa in the male has received in recent years well-merited attention and there is now

a considerable literature dealing with this aspect of the disease. It may be said on the other hand that the subject of gonorrhœa in women is still a neglected chapter in medical education. For this reason, as well as for their intrinsic excellence, Dr. J. J. Abraham's lectures on gonorrhœa in women and children<sup>1</sup> should be welcomed by all who have the difficult task of dealing with these distressing maladies.

The volume comprises nine lectures, briefly covering the usual immediate and remote manifestations of gonorrhœa in women and children and dwelling more particularly on treatment. No attempt is made at elaboration and the methods described are intended primarily for use where the equipment available is that ordinarily possessed by the general medical practitioner.

The subject is well covered, considering the size of the volume, while the teaching embodying a good deal of the traditions of the London Lock Hospital with which the author is associated, is thoroughly sound and branded throughout with the hall mark of practical experience.

Special attention may be drawn to the lecture on gonococcal sterility and to that on the important but often neglected subject of the various tests of cure. The standard of cure put forward by the author should be adequate for general use and yet not too elaborate to defeat its own ends by setting up an ideal impossible to attain.

This little book may be welcomed as a distinct addition to the literature of the subject with which it deals, and should be in the hands of all who have the responsibility of treating gonorrhœa in the female.

#### THE PREVENTION OF DISEASE.

THE second volume of a text and reference book for physicians, medical students and health workers by Professor Victor C. Vaughan, of the University of Michigan, assisted by Dr. Henry F. Vaughan, Commissioner of Health for the City of Detroit, and Dr. G. T. Palmer, Epidemiologist for the City of Detroit, has recently been published.<sup>2</sup> The diseases discussed in the present volume include nutritional disorders, alimentary infections and percutaneous infections. The subjects of venereal diseases and public health administration are to be dealt with in the third volume.

The volume under review constitutes a valuable work of reference. Its scope is wide and the reputation of its authors is a guarantee of thoroughness in treatment, which is fully borne out by examination of the contents. The treatment of the subject matter is naturally from the American point of view, but not to an extent which impairs its value for non-American readers. The excellent reports of the United States Public Health Service have been largely drawn upon, especially in connexion with preventive measures and other methods of procedure. The chapter on plague appears not to be up to the standard of the best of the book. The authors fail to utilize sufficiently the investigational work of the Indian Plague Commission and the result is an epidemiological picture rather blurred in some of its details and not as convincing as it might be.

An examination of the bibliographical lists following each chapter discloses that the names and works of the authors quoted in the text are not always given in the categorical lists. This appears to be a mistake. A bibliography loses a good deal of its value if it is not complete.

The book is well written and pleasant to read and contains a fund of useful information on the subjects treated. It is deserving of a place on the book shelves of every person concerned in public health administration or interested in the subject.

<sup>1</sup> "Lectures on Gonorrhœa in Women and Children," by J. Johnston Abraham, C.B.E., D.S.O., M.D. (Dub.), F.R.C.S. (Eng.); 1924. London: William Heinemann (Medical Books), Limited; Crown 8vo., pp. 152, with nine illustrations and four plates. Price: 7s. 6d. net.

<sup>2</sup> "Epidemiology and Public Health," by Victor C. Vaughan, M.D., LL.D., assisted by Henry F. Vaughan, M.S., Dr.P.H., and George T. Palmer, M.S., Dr.P.H.; in Three Volumes; Volume II: Nutritional Disorders, Alimentary Infections, Percutaneous Infections; 1923. St. Louis: C. V. Mosby Company; Royal 8vo., pp. 917, with 53 illustrations. Price: \$9.00.

<sup>1</sup> "The Science and Art of Anæsthesia," by Colonel William Webster, D.S.O., M.D., C.M.; 1924. St. Louis: The C. V. Mosby Company; Demy 8vo., pp. 214, with 39 illustrations. Price: \$4.75.



## The Medical Journal of Australia

SATURDAY, SEPTEMBER 27, 1924.

### The Doctor John B. Murphy Oration.

IN April of this year Dr. Franklyn Martin, the President of the American College of Surgeons, invited Dr. N. D. Royle to deliver the Doctor John B. Murphy Oration at the clinical congress to be held in New York on October 20, 1924. He also asked Professor John I. Hunter to collaborate with Dr. Royle in delivering the oration. That an invitation to deliver the Doctor John B. Murphy Oration is a very great honour may be gathered from the fact that the previous orators are Sir Berkeley Moynihan, Dr. William Mayo, Professor Raffaele Bastianelli and Dr. George W. Crile. The work that Dr. Royle has been carrying out fully justifies this welcome recognition and establishes a permanent record of the merit of that work. Our American colleagues have shown wisdom in associating with him Professor John I. Hunter, for the latter has contributed many valuable suggestions and made many important criticisms which have enhanced the importance of Dr. Royle's investigations. In the present issue we publish a very interesting and important paper by each of the workers.

The chief importance of Dr. Royle's work lies in the demonstration of the function of the non-medullated fibres supplying the skeletal muscles. For several years he has been endeavouring to gain more exact knowledge of the mechanism underlying spastic paralysis with a view to an improvement of its treatment. In 1919 he became aware that the exaggeration of plastic tonus in spastic paraplegia could not be explained by assuming a disturbance of the reciprocal innervation of muscles. Dr. Royle continued to carry out well-planned experiments on lower animals, adopting the method of endeavouring to reproduce spastic paralysis. Much of the early work proved of value, in that it forced him to the conclusion that some unknown nervous mechanisms was at work. While he was searching for further

points of attack, Professor Hunter returned from Europe and brought with him a few microscopical slides of skeletal muscle in which the presence of non-medullated nerve fibres were readily seen. The presence of these fibres had been discovered by Boeke in 1911, but varied opinions were held concerning their function. Professor J. T. Wilson as late as 1921 pointed out that while the fact of their distribution to voluntary muscle was undoubted, it was only an assumption that they might in some way be concerned in the conduction of motor and possibly tonic contractile impulses. Dr. Royle at once realized that the specimens in Professor Hunter's possession might provide the information for which he had been seeking. A study of the literature on postural or plastic tonus revealed a new aspect of the whole subject. Working in the laboratories of the Department of Anatomy at the University of Sydney and receiving assistance and advice from Professor Hunter, he soon devised experiments which yielded in an unambiguous manner definite information concerning the part played by the sympathetic nerves to muscles in the maintenance of posture. Attention should be directed to the fact that postural tonus is not a voluntary function. A limb can be placed in any position desired, but when the attention of the subject is withdrawn from the limb, the posture is maintained even against the action of gravity. This involves a complicated physiological process. It is preceded by an adjustment of the antagonist muscles, which has been described by Sherrington as the "lengthening" and "shortening" reactions. But, as Dr. Royle has pointed out, the tone does not depend on the absence or presence of slack on the muscle. It is a separate function of muscle which is neither initiated nor controlled by its spinal innervation. He was able to demonstrate on goats that postural tonus could be removed by section of the *rami communicantes* of the corresponding sympathetic ganglia. Goats were chosen because it is practically impossible to avoid damage to medullated nerve fibres when the *rami* are cut through in small laboratory animals. Dr. Royle has not attempted to investigate the chemical changes which undoubtedly form the last link in the chain of events resulting

in the maintenance of posture. It remains for some other investigator to discover how the sympathetic nerve impulse is translated into chemical language and in what way the chemical stimulus leads to that slow removal of tonic contraction characteristic of the involuntary maintenance of posture. After the intensely difficult question of the meaning of non-medullated nerve fibres in skeletal muscle had been answered, a question which had baffled the world of physiology for fourteen years, Dr. Royle returned to his original problem and continued with eminently successful results his experiments on the treatment of spastic paraplegia. He found that division of the *rami communicantes* in decerebrate rigidity brought about a disappearance of the exaggerated plastic tonus, thus confirming the converse physiological action. In the course of these experiments and of the operative experiments on man he was able to analyse the phenomena in terms of physiology and in this way much fresh information concerning the function of the sympathetic fibres in voluntary muscle has been gained. The last word has not yet been spoken. Hitherto neither he nor Professor Hunter has produced evidence confirming or refuting the suggestion made by Professor J. T. Wilson that these sympathetic fibres may possess a power of conducting motor impulses to muscle. Professor Hunter has recently undertaken some important investigations in connexion with sympathetic innervation from the morphological and physiological points of view. Some of the earlier observations have been published in our columns and he has still many valuable messages to deliver.

It will thus be seen that the production by Dr. Royle of definite proof of the significance of the sympathetic nerve fibres in skeletal muscle in connexion with postural tonus opens up a large field of physiological possibilities. All over the world the importance of the work has been recognized and the fact that he and Professor Hunter are now on their way to New York to deliver the Doctor John B. Murphy Oration is only one sign of that recognition. It is, however, a graceful compliment to our two scientists and indirectly to the University of Sydney of which both are graduates.

## Current Comment.

### GOITRE AND MENTAL DISEASE.

It is a well known clinical fact that patients suffering from exophthalmic goitre often manifest symptoms of mental disturbance. The patient may become irritable, emotional, excitable or restless. Some observers have claimed that a change in the mental condition may be one of the earliest symptoms of the disease. Instances have been described in which more serious changes have supervened, and melancholic and maniacal states have been attributed to it. Farrant in 1916 published the results of some of his investigations into the relationship of mental disease to goitre. Although he demonstrated the association of altered thyroid condition with abnormal mental states, it cannot be said that he proved them to stand in causal relationship to one another. In his paper published in *The British Medical Journal* no numbers or percentages were stated. Such terms as "frequently" and "sometimes" were used and apparently no control survey in regard to abnormal thyroid conditions in persons not the subject of mental disease was made. In a recent interesting communication on the subject of goitre and mental disorders Dr. Harold L. Foss and J. Allen Jackson refer to the conclusions formed by Massarotti in his study of the mental disturbances of exophthalmic goitre.<sup>1</sup> Massarotti thought that every syndrome of Graves's disease presented some nervous symptoms of varying severity. He thought that not infrequently the disease was complicated by true psychoses, but that these disturbances rarely affected individuals not predisposed to them and were generally observed in persons with nervous or mental heredity. He held that there was no evidence of a pathogenic relationship between the psychoses of Graves's disease and the disease itself. He thought that not infrequently Graves's disease aroused a latent mental disturbance.

Drs. Foss and Jackson have made a survey in two hospitals at Danville, situated in a tract of country in which goitre is endemic. One hospital was devoted entirely to the treatment of patients suffering from mental disease and the other was a general hospital. The inmates of the mental hospital numbered 1,647 (804 females and 843 males) and fifty-nine of these suffered from goitre; forty-nine were females and ten were males. Forty-one of the goitres were of the adenomatous variety. None of the patients manifested systemic evidence of toxæmia and none of the goitres were of the hyperplastic type of true Graves's disease. Of the goitrous female patients twelve suffered from *dementia præcox*, two from epileptic psychosis, two from melancholia, fourteen were mental defectives, one suffered from paresis and one from psychosis with cerebral syphilis. Of the male patients with goitre five suffered from *dementia præcox*, in three the psychosis was of the manic depressive type and in two it was associated with mental deficiency. In

<sup>1</sup> *The American Journal of the Medical Sciences*, May, 1924.

analysing these figures Drs. Foss and Jackson point out that although goitre was seen most frequently in the manic-depressive group and in those suffering from *dementia præcox* and mental deficiency, the value of this fact was less because these groups represent the highest percentage of the population of any mental hospital. At the same time they emphasize the fact that goitre was absent in those suffering from senile psychosis and but seldom present in those with epileptic psychoses and that both of these conditions are well represented in a mental hospital. In studying these patients every effort was made to determine the possibility of the presence of mental symptoms which could be ascribed to what might be termed a thyroid psychosis. Clinical studies, physical examinations and investigations of the basal metabolism were undertaken in an effort to determine the presence or absence of thyroid dysfunction. None was discovered. Drs. Foss and Jackson concluded therefore that the presence of thyroid enlargement in these patients could only be regarded as coincidental and that it had no definite bearing on the mental disease from which the patients suffered. They recognize that certain neurotic and psycho-neurotic manifestations may accompany exophthalmic goitre, but hold that such conditions do not represent true psychoses.

In the general hospital at Danville Drs. Foss and Jackson examined eight hundred patients with goitre among those admitted during seven years. Of the patients admitted for operation for goitre "only an extremely small number" manifested evidence of mental aberration. Occasionally patients with severe toxæmia of exophthalmic goitre gave evidence of a mild transient delirium. This occurred in less than 1% of patients. Two patients among the eight hundred developed several weeks after bilateral resections severe and uncontrollable mania followed by death. Both had been operated on for adenomatous goitre not associated with systemic symptoms. "The symptoms . . . were not those of a crisis of acute post-operative hyperthyroidism nor did they in any way resemble those of tetany." The results in these two patients has remained a matter of conjecture with no satisfactory solution.

Drs. Foss and Jackson conclude that there is no definite relationship between goitre and insanity and nothing to indicate thyroidectomy in the treatment of the insane patient suffering from goitre unless for the relief of mechanical pressure. Their work is not only interesting, but important. Many observers at the present time are attempting to find a basis for mental aberration in glandular insufficiency. In this communication this view is attacked and the reader is made to realize that the glandular origin of mental disease is not proven.

#### THE NUTRITION OF ARTICULAR CARTILAGE.

In 1920 Strangeways published some observations on the proliferation of cartilage in loose bodies in joints. He said that there were two possible sources from which the nutritive material causing this pro-

liferation might be derived. It might be derived from the death of cells in the fragment. He thought that the surviving cells might obtain their food supply from the dead cells. He referred to the fact that Burrows and Neyman had described the growth of cells in isotonic salt solution. He did not think that this explanation could be accepted on account of the fact that fragments increased in size after separation while they were lying free in the joint cavity. The other explanation was that the nutritive material is derived from the synovial fluid. Timbrell Fisher has made a study of the subject and reference has been made to his work in the pages of this journal about two years ago. He held that articular cartilage receives its nourishment from plasma that percolates along the meshwork formed by the more mucinous part of the cartilage matrix. He pointed out that a loose body in a joint usually acts as an irritant and causes a greater or less degree of synovitis with an outpouring of fluid rich in albumin. He analysed normal synovial fluid and showed that its protein content was much less than that of blood plasma. He said that it was clear that a loose body might derive its nutriment from the synovial fluid, but did not think that it had been proved that it normally derived its nutriment in this way.

The subject has been opened up again by Dr. Luke Koken Ito.<sup>1</sup> Dr. Ito has carried out a series of experiments on the joints of rats and rabbits. He opened the knee joints of these animals and removed from the condylar surface of the femur, where the cartilage was uncovered by any membrane, either one or two pieces of articular cartilage. Some pieces were removed with and some without pieces of subjacent bone. The detached piece or pieces were left free in the same joint cavity and the joint was carefully sutured. The results were observed after intervals that varied from one to fifteen weeks. The cartilage cells in the loose bodies in the majority of instances retained their vitality and many proliferated. The bone cells became inactive and died. In every instance but one the loose bodies were found to have gained a definite attachment to the synovial membrane. Some were almost embedded in it, others were affixed by edges and the whole of one surface, while others had secured a pedunculated attachment. Some loose bodies that had been set free in the joint could not be found afterwards even with the most careful search. Only one loose body was found wandering free in the joint cavity of a rabbit. No sign of previous attachment could be found on this body and Dr. Ito thinks it fair to assume that it had remained free during the whole time that had elapsed since it was placed free in the joint.

Dr. Ito regards his experiment as confirmatory of the belief that synovia can nourish loose articular cartilage. Although, in view of all the work that has been done in tissue culture, it is quite likely that this is so, "one swallow does not make a summer" and Dr. Ito's experiments are neither sufficiently extensive nor productive of result to allow the formation of very definite conclusions.

<sup>1</sup> The British Journal of Surgery, July, 1924.



## Abstracts from Current Medical Literature.

### GYNÆCOLOGY AND OBSTETRICS.

#### The Treatment of Puerperal Sepsis by Quinine Injections.

S. GORDON LUKER (*Proceedings of the Royal Society of Medicine*, December, 1924) reports the results he has obtained in treating patients suffering from puerperal sepsis by quinine injections. The uterine cavity is cleaned out if considered necessary. Thirty cubic centimetres of anti-streptococcal serum are given daily for two days and twenty cubic centimetres on the third day. Intramuscular injections of quinine bi-hydrochloride 0.3 gramme in one cubic centimetre of sterile water are made into the buttock or thigh on alternate sides daily for six days. Or it may be given intravenously in doses of 0.18 gramme in ten cubic centimetres of sterile water. He concludes that the treatment is of great value. It is also useful in all forms of puerperal sepsis both in early and chronic stages. Its action is preventive or abortive as well as curative; thus if given to all patient with acute sepsis, it will prevent septicaemia.

#### Acute Infections of the Uterus and Their Treatment by Drainage.

REMINGTON HOBBS (*Proceedings of the Royal Society of Medicine*, July, 1924) gives his experience in the investigation of the causes of acute infection of the uterus including puerperal sepsis and septic miscarriages and his results in their treatment by drainage. He concludes that careful treatment of the endometrium with draining of the cavity of the uterus does not produce an extension of existing inflammation, but lessens it. The cavity of the uterus can be approached repeatedly until the uterus becomes firm and the discharge is abolished. One treatment is not sufficient to disinfect an infected uterus. It is safer to drain the uterus after swabbing or curetting and after the application of strong styptics to its interior. In a large number of instances of uterine infection with pelvic inflammation, the cause of the pain and discomfort lies not so much in the tubes as in the uterus, because it is inflamed, heavy and obstructed. Inflammatory conditions spreading from the uterus to the adnexa are not only no bar to, but are an indication for the need of treatment of the endometrium, since the primary focus of infection resides in it. This is proved by the facts that the pain disappears and the physical signs subside much more quickly when the uterus is drained, than when it is left alone. Unless the lesions outside the uterus are of the grossest kind (large collections of pus in the tubes, pelvic abscess, general peritonitis) no abdominal operation should be performed, at any rate until thorough

and methodical treatment of the endometrium has been tried. Exacerbations of salpingitis have been far less frequent if the uterus has been left in a healthy condition. After treatment of the infected endometrium menstruation becomes painless and the excessive flow becomes normal in amount. If the infected tubes are removed and the uterus is not rendered healthy, patients are liable to attacks of acute endometritis and pelvic peritonitis. Primary hæmorrhage is the only indication for exploring the uterus after labour or miscarriage. Secondary hæmorrhages can usually be dealt with by suitable intra-uterine treatment. Retained products producing septic discharges can be treated by drainage alone and do not necessitate operation. If the uterus be suitably drained and allowed to recover its tone to some extent, the septic products are expelled naturally or present themselves at the os uteri when they can be gently twisted out. When bacilluria complicates the puerperium, it should be borne in mind that inflammation of the uterus is present in some form. The surgeon must not be misled by the failure to isolate organisms on a smear preparation and by a partially draining uterus. The author describes in detail his method of draining the uterus with terminal eyed catheters and glycerine and iodine.

#### The Kielland Forceps.

J. P. GREENHILL (*American Journal of Obstetrics and Gynecology*, March, 1924) makes a collective review of the German literature for 1921 to 1923 in reference to the use of the Kielland obstetrical forceps, which were introduced by Christian Kielland, of Norway, in 1915. These forceps are lighter in structure than the accepted types, the lock is not fixed, but is sliding in character and it has only an extremely small pelvic curve. The blades can always be applied to the biparietal diameter of the fetal head, hence these forceps are particularly adapted for use when the head is high and the sagittal suture runs transversely. After describing the method of application the author points out the advantages claimed by the originator. These are the ease with which the forceps are applied regardless of the station of the head and the direction of the sagittal suture; the fact that the head is not displaced when the blades are inserted; the fact that the forceps cannot possibly slip off the head and that the grasp is harmless to the child; the application is not only symmetrical, but is ideal and remains unchanged during traction, which can be made in the direction of the handles; the blades are applied to that part of the child's head which can best endure pressure, namely the cheeks and the underlying bones; there is no pressure on the skull, orbit, brow, nose, neck or facial nerve as so often occurs when the old forceps are applied to the unrotated

head. Because the blades fit the head exactly, this instrument is safe for rotation purposes. It may be used when the cervix is incompletely dilated with a greatly lessened risk of damage. Owing to the symmetrical application of the blades on the head extraction is attended with much less force than is necessary with other types of forceps. There have been thirty-six statistical reports concerning the use of the forceps in 1,762 deliveries. In addition twenty-seven other individuals have expressed opinions about the new forceps and nearly all feel that the instrument is a definite advance for delivering babies when the head is high and when the occiput is not in the anterior half of the pelvis. Most authors agree that the insertion of the anterior blade in the uterus is easily accomplished and without danger and that maternal lacerations are less frequent than with the old types of forceps. The new forceps do not slip because there is an equal distribution of pressure all over the skull and the results for the children are very good. Rotation is easily accomplished and without damage. A biparietal application is always possible, the normal mechanism of labour can be easily imitated and less force is necessary for delivery. About half of the authors feel that the use of the forceps should be restricted to specialists in obstetrics.

#### Ocular Changes in Pre-Eclamptic Symptoms.

LYDD MILLS (*American Journal of Obstetrics and Gynecology*, March, 1924) reviews the significance of ocular changes occurring in association with pre-eclamptic symptoms. He considers that the eyes are involved in more than 90% of all pregnant women as the result of the physiological enlargement of the pituitary gland, which causes different degrees of contraction of the visual fields by pressure on the optic commissures and tracts. In the more definite cases more or less retinal venous stasis probably arises from the same origin. A temporary but decided loss of control as well as temporal vision, amounting to practical blindness at times, has also been occasionally noted. This was heretofore classed among the toxæmias of pregnancy. No gross renal, blood or obstetric pathology is found in such conditions, which probably represent an acute obstructive retinal stasis and edema or the direct effect of relatively excessive pressure upon the optic nerve system or a combination of these factors. The symptoms in these conditions, hitherto assumed to be pre-eclamptic, headache, nausea and vomiting, epigastric and colonic distresses, occur not seldom without renal or hepatic disturbance. It seems probable that they arise from the local intra-cranial pressure of the hypertrophied pituitary as well as from greatly increased pituitary function. The separation of symptoms, hitherto considered to be pre-eclamptic, into those of pituitary origin and those



arising out of a genuine toxæmia of pregnancy and an accurate knowledge of the relative importance of each will be accomplished in a large measure by systematic examinations of the visual fields and eye grounds of all pregnant women who suffer late in pregnancy from headache, nausea and vomiting, abdominal distress and renal or hepatic disturbance.

# NEUROLOGY.

## Action of Scopolamine in Post-Encephalitic Parkinsonism.

MAGALHAES LEMOS (*Revue Neurologique*, November, 1923) reports an instance of Parkinsonism following encephalitis in which injections of 0.00120 gramme of scopolamine repeatedly induced ankle clonus and active tendon reflexes. These lasted several hours whereas previously they had been held in abeyance by rigidity. The observations proved, therefore that in this patient there existed degeneration not only of the extrapyramidal, but of the pyramidal tracts proper. Accordingly, a diagnostic use for scopolamine is added to its well-known therapeutic use in conditions of tremor and spasticity.

## Pathological Laughing and Crying.

S. A. KINNIER WILSON (*Journal of Neurology and Psychopathology*, February, 1924) writes on the problem presented by certain cases of abnormal expression in the guise either of exaggerated or uncontrollable laughing or crying or, conversely, of paralysis, at least in part, of the same mechanism. Among the organic affections apt to be associated with the occurrence of pathological laughing or crying may be enumerated double hemiplegia, pseudo-bulbar paralysis and disseminated sclerosis. Their appearance after a single hemiplegia has also been observed and the symptom-complex is of moderate frequency in certain stages of basal degeneration from diffuse vascular processes and in tumour growths, infective conditions or vascular degenerations when appropriately situated. In addition to these the author discusses instances characterized by volitional normality, but emotional abnormality of facial movement, namely those who exhibit a unilateral facial paralysis only when they laugh. In regard to the emotional factor in all these cases, the stimuli are often inadequate and inappropriate. One patient cried when she was spoken to, when any one sat beside her, when a hand was laid on her arm. Another walked about with eyes turned constantly to the ground; if he so much as raised them to meet anyone else's gaze, he was immediately overcome by compulsory laughter which sometimes lasted for four or five minutes. Why some can only laugh, while others can only weep is not easy to determine, but as everyone knows laughter and tears are "near each other." The pathological displays differ from normal in their in-

evitability, frequency, uncontrollable character, the occasionally contradictory relation of "cause" and "effect" and the extreme facility with which they are induced. It is pointed out that in the expression of emotion the facial and respiratory musculatures are physiologically associated. Sir Charles Bell called the seventh the "facial nerve of respiration." The general conclusion comes to is that there are corticofugal paths to the facio-respiratory centres in the pons and medulla independent of the voluntary cortico-ponto-bulbar tracts to the same nuclei whose exact course is unproven, but which pass close to the optic thalamus. In the production of the abnormal emotional activity under consideration the cortex of the brain actively participates.

## Radio-Therapy in Tumours of the Brain and Spinal Cord.

EDWARD FLATAU (*Revue Neurologique*, January, 1924) says that the use of X-rays and radium in the treatment of cerebral and spinal tumours has not been common, first, because localization is uncertain and, secondly, the fear of injuring normal tissues has acted as a deterrent. After dealing with the literature concerning the effect of "rays" on nervous tissues and previous attempts on the treatment of tumours, Flatau records observations of twenty patients whom he himself has treated, namely four with tumours of the spinal cord, seven with tumours of the cerebral hemisphere and nine with tumours of the hypophysis. X-rays were employed almost exclusively and details of the mode of application may be read in the original. In the cases of tumour of the spinal cord (two of sarcoma, one of angioma, the remaining one of unknown nature) the results were "satisfactory." In five of the cases of tumour of the brain also the results were "distinctly encouraging." Taking observation IX. as an example, a man of twenty-seven years with the classical signs—headache, vomiting (existing over months), papilloedema and progressive hemiparesis of the right side, was so benefited by treatment that at the end of two months all the signs above mentioned had disappeared. In the cases of tumour of the hypophysis the results were even more striking. In all there was some improvement, shown chiefly by disappearance of the headaches and vomiting and to a lesser degree by clearer vision, while in one instance the adipo-genital syndrome was removed. The writer's conclusion is that radio-therapy in tumours of the central nervous system might be more frequently employed than has hitherto been the case.

## Plastic Tonus in Encephalitis Lethargica.

DOUGLAS McALPINE (*Brain*, Volume XLVII, Part II, 1924) gives a clinical description of a patient whose condition was characterized by unusual sequelæ of epidemic encephalitis, namely (1.) left unilateral Parkin-

sonism, (ii.) the presence in the right upper and lower limbs of plastic tonus and decerebrate postures, associated with signs of a pyramidal tract lesion. The muscular tonus in the right upper and lower limbs was shown to possess all the features of increased "plasticity" as originally described by Sherrington in the musculature of the decerebrate animal. In particular "shortening" and "lengthening" reactions were well exemplified. The following observation illustrates the "lengthening" reaction as observed in the right quadriceps muscle. The right leg raised passively from the bed became tonically extended at the knee and would remain in this position unsupported for several seconds. If now the knee were passively flexed the leg remained flexed at this angle. In other words, the quadriceps had adapted itself to the greater length passively imposed upon it without any obvious alteration in tension. The most striking example of the "shortening" reaction was seen in the right deltoid and shoulder muscles. When the right arm, extended at the elbow, was passively abducted from the side in a somewhat abrupt manner, the arm remained unsupported in this position for two or three seconds and then progressively rose until it reached a point above the head, where it would remain for many minutes involuntarily held by the tonic contraction of the neck and shoulder muscles. Successive taps on the patellar tendon also led progressively to extensor rigidity. The writer concludes with the speculation that this clinical syndrome may be caused by a bilateral affection of the *substantia nigra*, with a caudal extension of the lesion on one side.

## Westphal-Strümpell Pseudo-Sclerosis.

C. MACFIE CAMPBELL AND M. E. MORSE (*Journal of Neurology and Psychopathology*, May, 1924) report a case of Westphal-Strümpell pseudo-sclerosis as an example of the forms of brain disease in which the symptoms depend on involvement of the basal ganglia. A man, aged forty-seven years, was attacked with erysipelas accompanied by prolonged sleep of thirty-six hours and dazed behaviour. For several months thereafter he showed as residual symptoms, restlessness, irritability, somnolence, general weakness, special weakness of the left side of the face, facile laughter and crying, defective speech and signs of jaundice. Recurring erysipelas caused death one year later. On *post mortem* investigation the condition was stamped as pseudo-sclerosis by the presence of large, vesicular, polymorphous glia nuclei, together with lesions of the nerve cells, diffusely distributed in cortex, basal ganglia and mid-brain and to a lesser degree in cerebellum and pons. There was an absence of gross lesion in the brain, a partial degeneration and the combination of these changes in the nervous system with a nodular cirrhosis of the liver. These changes, taken in conjunction with the recurrent erysipelas, probably had an infective basis.

## British Medical Association News.

### SCIENTIFIC.

A MEETING OF THE NEW SOUTH WALES BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the B.M.A. Building, 30-34, Elizabeth Street, Sydney, on July 31, 1924. DR. ANDREW DAVIDSON, the President, in the chair.

#### The Sympathetic Nervous System.

DR. T. K. POTTS gave an interesting demonstration of work that had been carried out by him at the University of Sydney on the peripheral connexions of sympathetic nervous system and illustrated his remarks by lantern slides. Many of the observations were of an original nature and will be submitted to the University of Sydney as a thesis. For this reason they cannot be published in this journal.

#### Sympathetic Ramisection.

DR. N. D. ROYLE read a paper entitled: "The Indications for Sympathetic Ramisection, Together with Observations on Muscle Tone" (see page 313).

#### Plastic Tonus.

PROFESSOR J. I. HUNTER read a paper entitled: "The Nervous Mechanism Concerned in the Production of Plastic Tonus" (see page 318).

Dr. Royle and Professor Hunter illustrated their remarks by lantern slides and cinematograph films.

The PRESIDENT called on PROFESSOR MILLS to propose a vote of thanks to the readers of the papers. This was seconded by Dr. G. H. ABBOTT and carried.

A MEETING OF THE VICTORIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held in conjunction with the Alfred Hospital Clinical Society at the Alfred Hospital on August 6, 1924. DR. J. W. DUNBAR HOOPER, the President, in the chair.

#### Pulmonary Abscess.

DR. A. V. M. ANDERSON discussed the case of a male patient who one month previously had undergone an operation for the removal of tonsils and post-nasal adenoid vegetations. Prior to the operation he had been in poor health and had been troubled by a pharyngeal cough. Two days after the operation the patient had become febrile and had appeared to be affected by acute bronchitis; broncho-pneumonia had supervened and subsequently signs of pulmonary consolidation and pleurisy had been detected at the base of the right lung. Physical examination on July 22, 1924, had disclosed signs suggestive of the presence of a small cavity in the lower lobe of the right lung. The sputum had been purulent; one hundred and twenty cubic centimetres had been expectorated in twenty-four hours. Various examinations had failed to disclose tubercle bacilli.

An estimation of the total leucocytes had shown the count to be 21,000 per cubic millimetre.

Under an open air régime and the adoption of postural coughing the patient's temperature had declined a little and the amount of sputum had diminished.

Dr. Anderson invited discussion on the following suggested lines of treatment: (i.) Postural coughing as a means of emptying the cavity, (ii.) bronchoscopy and dilatation of the bronchus, (iii.) artificial pneumothorax, (iv.) operative measures for the drainage of the cavity.

#### Tachycardia.

DR. M. D. SILBERBERG presented a group of three patients all of whom were affected with tachycardia.

The first, a man aged thirty-eight years, had been engaged in gold mining for a period of ten years until he contracted measles and attendant pneumonia in 1915. Since that time he had been much distressed by palpitation, dyspnoea, giddiness and inability for sustained exertion. He was a tall, thin subject, of very poor chest

dimensions; the sternum was depressed. The cardiac sounds were clear and the apex beat was located at a point 10.5 centimetres to the left of the mid-line of the sternum. No diagnostic features were detected in a skiagram of the chest; on auscultation it was noted that the respiration was of "cog-wheel" character and rhonchi were audible at the base of the right lung. It was considered probable that in this patient there existed a tuberculous basis for the symptoms of disordered sympathetic control.

The second man, an ex-soldier, aged twenty-nine years, had contracted scarlet fever in 1915 and had afterwards been discharged as affected by disordered action of the heart. For the past nine years he had suffered from palpitation, dizziness, tremors and dyspnoea on exertion; he had been forced to abandon his work on the land.

The heart was not increased in size, but a systolic bruit was audible at the apex. The pulse was rapid and became very much accelerated after minor degrees of effort. The systolic and diastolic blood pressures were 152 and 94 millimetres of mercury respectively.

The third patient, aged thirty-three years, was also an ex-soldier. He stated that he had suffered from mumps and scabies in 1918 and had contracted gonorrhoea in 1916. For the last six years he had complained of palpitation, tremors, sweating and fatigue and breathlessness on exertion. Twelve months previously he had been ill with left-sided pleurisy. A faint systolic murmur was audible in the mitral area. By X-ray examination it was determined that the pleura on the left side was thickened. A diagnosis of tuberculosis or of syphilis was not supported by the results of the von Pirquet and Wassermann tests. Electro-cardiograms were exhibited, but they did not reveal any abnormality in the cardiac cycle.

#### Aortic Disease.

DR. SILBERBERG further showed two patients suffering from aortic disease. The first, a man, aged fifty-one years, had syncopal attacks. The patient experienced his first attack in February, 1924, and had suffered many severe attacks subsequently. Later he had been very short of breath; sensations of giddiness and severe pain across the chest which sometimes radiated into the left arm, had also been troublesome symptoms.

The apex beat was placed in the nipple line. A very rough "sawing" type of systolic bruit was audible all over the præcordium, but was of maximum intensity at the aortic area. The systolic blood pressure was 140 and the diastolic 85 millimetres of mercury. No aneurysm could be detected by physical or radiographic examination and no evidence of syphilis could be adduced by the Wassermann test applied to the patient's blood serum.

Dr. Silberberg exhibited electro-cardiograms which illustrated a bundle branch lesion.

Dr. Silberberg presented the second patient as furnishing an example of aortic regurgitation and probably sub-acute bacterial endocarditis. The patient had suffered several attacks of rheumatic fever. No evidence of syphilitic infection was obtained by the Wassermann test. The physical signs demonstrated included a great degree of cardiac enlargement, collapsing pulse and capillary pulsation. There was a distinct systolic thrill over the aortic area and supra-sternal notch. A very loud aortic systolic bruit could be heard without the aid of a stethoscope at a distance of two centimetres from the chest; a diastolic murmur was also present. The patient exhibited clubbed fingers, *café au lait* complexion and occasional petechiae on the chest and arms. At intervals there was a slight rise in temperature.

#### Mitral Stenosis.

DR. SILBERBERG demonstrated from a female patient, aged thirty-eight years, a subject of mitral stenosis on which had supervened auricular fibrillation, renal embolism, popliteal embolism and gangrene of the leg.

As far as could be ascertained the patient had never suffered from rheumatic fever. She had been admitted to the Alfred Hospital on May 26, 1924, on account of severe sudden pain in the left lumbar and hypochondriac regions;

the onset of the pain, which radiated towards the pubis, had been associated with vomiting. The urine, examined at the time of the patient's admission, had been found to contain many red blood corpuscles. The left kidney had been enlarged and tender, but the enlargement rapidly subsided. The cardiac rhythm had been completely irregular; a systolic block had been present at the apex and the first sound, with which was associated systolic and diastolic bruits, had been of a "slapping" character. The heart rate had steadied after the administration of digitalis, but no quinidine had been given.

On June 6, 1924, the patient had complained of the sudden onset of numbness in both legs and more particularly in the right leg. Considerable tenderness had been found in the right popliteal fossa and over the femoral artery. The leg and foot, at first cold and marbled, had gradually become discoloured and eventually gangrene extending almost to the knee, on the lateral aspect and to a little lower level on the medial aspect, had set in. No organisms had been recovered by blood culture.

#### Heart Block.

Dr. Silberberg also showed two patients presenting the clinical features of complete heart block.

In the first, a man, aged fifty-six years, the heart block was associated with auricular fibrillation. The patient had suffered from shortness of breath and attacks of præcordial and epigastric pain for twenty years. Seven years previously he had become paralysed in the limbs of the right side, but after the lapse of twelve months he had regained the use of his arm and leg. Until 1919 he had been a heavy drinker.

On physical examination the arteries had been noted as unduly thick. The systolic blood pressure had been 170 millimetres of mercury and the pulse rate had been as low as thirty-two beats per minute. The apex beat had been placed 12.5 centimetres to the left of the mid-line of the sternum and a systolic murmur had been audible. Radiographic examination had shown general cardiac enlargement and dense shadows in the hilus of the lungs; no aneurysmal dilatation of the aorta had been detected. The examination of the blood serum by means of the Wassermann test had not disclosed any evidence of syphilis.

Electro-cardiograms in which auricular fibrillation and heart block were recorded, were exhibited.

The second patient, aged thirty-nine years, had been aware of the slowness of his pulse rate since the occasion of his first unconscious attack in 1916. He had had other attacks subsequently, but generally at long intervals. His pulse rate had been thirty a minute; the apex beat had been situated 12.5 centimetres to the left of the sternal mid-line; no adventitious sounds had been detected in the cardiac cycle. No reaction had been obtained to the Wassermann test.

Dr. Silberberg presented complete heart block as shown in electro-cardiograms.

#### Renal Disease.

Dr. WALTER SUMMONS showed a number of patients with renal disease and discussed the value of the various tests designed to estimate renal efficiency.

A woman, aged thirty-six years, had suffered from acute nephritis; she was convalescent and as far as could be ascertained there complete restoration of renal function. Her illness had been traced to an attack of acute pyelitis four years previously, after which chronic infection of the urinary tract had persisted and had culminated in acute nephritis which had rendered the patient extremely ill. Clinically the prognosis had not appeared to be very favourable, but there had been no definite vascular changes and by the urea concentration test the urine passed at the end of the second hour after the ingestion of urea had been found to contain 2.5% urea. This patient's ultimate and complete recovery supported the value of the renal efficiency test in a case in which the prognosis on clinical grounds was obscure.

In the second instance Dr. Summons showed a man, aged sixty years, who was known to have a very large

renal calculus. The size of the calculus as shown by an X-ray photograph indicated that there could be very little functioning renal tissue on the affected side. There was also evidence of chronic arterio-sclerotic nephritis and progressive vascular changes. In May, 1923, he had been placed on the operating table for the removal of the calculus, but the anaesthetist had not considered him a fit subject for anaesthesia. He had been discharged to the medical out-patient department where he had been found to have a lesion of the aortic valve, a systolic blood pressure of 184 and a diastolic blood pressure of 100 millimetres of mercury. In the urea concentration test the several successive determinations of the urea content of the urine had been 1.2%, 1.4% and 1.7%. The urine had contained albumin and a large number of hyaline casts. In this patient the pathological changes were progressive and his blood pressure readings were 216 and 140 millimetres of mercury. He suffered from nocturnal dyspnoea and there were oedema of the eyelids and a mild degree of anasarca. The calculus had not caused him much distress. Had this patient's renal efficiency been estimated, it was very likely that operation would not have been considered, as the indications were that surgical measures could not have been carried to a successful issue.

Dr. Summons's third patient was a woman, aged forty-two years, who had been admitted to the Alfred Hospital on June 26, 1924, suffering from acute nephritis. After three weeks in hospital she had made considerable improvement, but albumin in the urine to the amount of 1% (Esbach) had been persistent. The patient had been allowed out of bed on July 17 and the albumin increased to 5%. Since that time she had been kept at rest and the amount of albumin had diminished, but for the ten days preceding the meeting it had been estimated as 0.25%. Casts and red blood cells were present in the urine. In carrying out the urea concentration test fifteen grammes of urea had been administered at 9 a.m. on July 27, 1924. The findings were as follows:

- 9 a.m.: Sixty cubic centimetres of urine passed; urea content, 1.2%.
- 10 a.m.: Fifteen cubic centimetres of urine; urea content, 1.3%.
- 11 a.m.: Forty-five cubic centimetres of urine; urea content, 1.7%.

The urea content of the blood had been estimated as thirty-one milligrammes per hundred cubic centimetres. The patient looked and felt extremely well. Dr. Summons asked whether a persisting trace of albumin and a low renal efficiency result could be disregarded in view of the normal figure for the blood urea and the good clinical condition.

His fourth patient was a man, aged fifty-eight years, the subject of arterio-sclerotic nephritis and advanced vascular changes. He had been an in-patient in December, 1923, when he had exhibited transient monoplegia in the left arm and in the right leg; the systolic and diastolic blood pressures had been 190 and 130 millimetres of mercury respectively. He had been discharged relieved, but had been re-admitted on July 23, 1924, chiefly on account of nocturnal dyspnoea. Retinal vascular degeneration had been apparent on examination of the fundus oculi. The urine had been acid; its specific gravity had been 1015; it had contained 1.5% of albumin and many hyaline casts. The urea content of the urine passed at the end of the second hour after the ingestion of urea had been 2.2%.

The renal efficiency, though diminished, was still good and this patient's symptoms were regarded as due to arterio-sclerosis more than to renal disease. Confirmation of this view was supplied by the development of a left brachial monoplegia; this had persisted and had been associated with much mental confusion.

#### Ocular Lesions Due to Syphilis.

Dr. J. RINGLAND ANDERSON presented a series of patients with various syphilitic ocular manifestations. A man was presented with syphilitic iritis and a coexistent maculopapular syphilitic eruption. Nine patients with interstitial keratitis were shown to demonstrate all the stages from early infiltration to late scarring. In two patients only were the lesions the result of acquired syphilis. One man



had developed interstitial keratitis in the right eye in 1921, three years after he had contracted syphilis, but so far the left eye had not been affected. A woman, aged fifty-four years, had developed mild manifestations in each eye between April, 1924, and the date of the meeting. This was unusually late for the occurrence of interstitial keratitis.

#### Retino-Chorioiditis.

Two patients were shown in whose fundi there were changes suggesting that the retina had borne the brunt of the attack. These were of the nature of fine pigmentation and superficial atrophic patches and in one post-neuritic optic atrophy. This patient, a boy, twelve years of age, had suffered a sudden attack of unconsciousness preceded by aphasia. No localizing signs had been present and the diagnosis made was that of cerebral thrombosis dependent on endarteritis.

In another group of patients the typical changes of disseminated chorioiditis were demonstrated. In one woman posterior cortical lens changes were present together with chorioiditis; her daughter had interstitial keratitis and other syphilitic stigmata.

#### Optic Atrophy.

Dr. Anderson showed the following types of optic atrophy: (i.) Primary degeneration as seen in *tabes dorsalis*. A boy, aged seventeen years, was suffering from juvenile tabes. In 1921, he had had sphincteric trouble; his vision had begun to fade and later the *quadriceps extensor* and *Achilles tendon* reflexes could not be elicited. He had bare perception of light in the only seeing eye. (ii.) Atrophy following neuritis or neuro-retinitis. (iii.) Atrophy secondary to retino-chorioidal degeneration.

#### Intra-Cranial Gumma.

A man, aged forty-five years, had been an in-patient at the Alfred Hospital on account of severe headaches and frequent vomiting. His vision had been failing and he had four diopters of papilledema. He had responded rapidly to the administration of mercury and potassium iodide and was quite well at the time of the meeting. His vision was normal and no changes were detected in the ocular fundi.

At the conclusion of this demonstration Dr. Anderson said that there was great need for a department at the hospital in which thorough ante-natal and post-natal anti-syphilitic treatment could be carried out. The ravages of inherited syphilis were so common and the futility of treatment in later life so real that this work required urgent attention.

#### Mikulicz's Syndrome.

As illustrating Mikulicz's syndrome, Dr. Anderson showed a woman, aged thirty-four years, whose chief complaint was dryness of the eyes and mouth. The lachrymal and salivary glands had been swollen for two years. Several cervical lymphatic glands were also enlarged. In the absence of any pathological changes in the blood a diagnosis of Hodgkin's disease was suggested.

#### A New Perimeter.

A new locally made perimeter was demonstrated. It combined several new features with ideas taken from other instruments and it was claimed to possess advantages in speed and accuracy. The desirability of measuring the temporal field to  $110^\circ$ , of using small objects and of eccentric fixation was shown by various fields demonstrated. These included an enlarged blind spot due to opaque nerve fibres and various forms of hemianopia sequent on injury, vascular lesions and *encephalitic lethargica*.

#### Cavernous Angioma.

Mr. R. C. BROWN showed a man, of seventy-six years, who had been relieved of a swelling which had been present on the right side of the neck for fourteen years. He had been compelled to seek advice on account of rapid increase in size of the tumour which had produced some dysphagia and changes in the voice. He had also experienced some nocturnal dyspnoea.

Examination prior to operation had shown a large oval cystic tumour displacing the larynx and trachea four centimetres to the left. The carotid artery had been displaced to the right and was lying superficial to the growth. On July 11, 1924, Mr. Brown had excised the tumour under local anaesthesia.

The structure of the growth as determined by microscopical section was that of a cavernous angioma in which the component vessels were intermingled with areas of more or less differentiated embryonic thyroid tissue. The red areas seen in macroscopical examination corresponded to hæmorrhage and cavernous angioma and the pale areas to thyroid tissue.

#### Evisceration.

Mr. Brown's second patient was a man, aged seventy-two years, by occupation a carpenter, who had undergone excision of the rectum for extensive carcinoma in November, 1918. Colostomy of the transverse colon had been performed and the patient had continued his occupation in good health until September 7, 1922, when during a fit of coughing at 12.30 a.m. the small intestines had burst through the colostomy opening into the bed. He had been sent into hospital and a large quantity of small intestine had been returned into the abdomen through a rent in the wall of the transverse colon, which was sutured. He had made an uninterrupted recovery and had continued his occupation as a carpenter and decorator since.

#### Carcinoma of the Ileum.

Mr. Brown showed a man, aged sixty-five years, who when he had first attended the Alfred Hospital on May 26, 1924, had stated that he had been troubled for three years by attacks of pain in the right side of the abdomen. The pain had recurred at intervals of two or three weeks, but had recently become much worse. He had also discovered a lump in the right side of the abdomen. His appetite had been fair; the bowels had acted regularly and there had been no vomiting. He had lost nineteen kilograms in weight.

On examination visible peristalsis had been observed, the waves passing across the hypogastrium at intervals.

Operation on May 29, 1924, had disclosed a ring carcinoma of the ileum with secondary enlargement of several mesenteric glands. The largest of these invaded the adjacent folds of mesentery. The proximal thirty centimetres of small bowel had been greatly hypertrophied, but above this and below the stricture the bowel had been normal in appearance. It had been necessary to excise a portion of intestine amounting to one-quarter or one-third of the length of the small intestine owing to the mesenteric involvement.

Examination of the specimen showed an annular carcinoma projecting into and obstructing the lumen of the small bowel to such an extent that only fluids could pass through. Microscopically the structure of the tumour was that of a typical spheroidal-celled carcinoma.

#### Ununited Birth Fracture.

MR. BALCOMBE QUICK showed a boy, aged ten years, who had had a deformed tibia since birth. Some weeks before his birth his mother had received a blow on the abdomen. The child had commenced walking with the aid of an iron frame about the second year of life and had always used the frame. In April, 1924, he had injured the deformed leg and from that time until the date of admission had been under increasing disability in walking. He had been admitted to the Alfred Hospital on May 13, 1924, with gross deformity of the tibia and indications of non-union in the bone. The blood of the boy and of both his parents had not revealed any indication of syphilis when examined by the Wassermann test.

At operation on May 19, 1924, the fibula had been divided in order to allow straightening of the leg. There had been no attempt at bony union of the tibial fragments and the bone for a distance of two centimetres was very sclerosed. The ends of the fragments had been pared away and semi-cylindrical pieces cut from each fragment, that from the upper being twice as long as that from the

lower. The upper piece had been reversed and placed in the groove fashioned in the lower fragment, thereby bridging over the site of the fracture. The leg had been encased in plaster of Paris, which had been removed after six weeks. It had then been found that some degree of union had occurred and other splint had been applied. Dr. Quick exhibited a plaster cast of the limb to show the deformity before correction and various skiagrams.

#### Obturator Dislocation.

MR. FAY MACLURE, O.B.E., showed a male patient who six weeks previously had fallen from a jinker in such a manner that his left foot had been caught under the seat and his head struck the ground. At the time of the accident he had experienced severe pain in the region of the left hip joint and he had been compelled to rest in bed for one week. At the end of that time he had commenced to go about as usual. Examination showed a flexion deformity of the left hip joint and much impairment in the range of movement of the joint. Skiagrams were exhibited from which it was evident that an obturator dislocation of the hip joint had occurred.

#### Application of Pressure to Chronic Ulcer.

Mr. MacLure's second patient was a man, aged thirty-one years, who had first suffered with acute osteo-myelitis affecting the distal extremity of the tibia when he was thirteen years of age. Suppuration had recurred in November, 1922, on which occasion the ankle-joint had been implicated. Resection of the major portion of the distal end of the tibia had been performed and the man, able to walk with the aid of crutches, left hospital in February, 1923. No improvement in chronic ulceration affecting the scarred areas had occurred in the course of twelve months, but great advance in healing had taken place since the application of continuous sponge pressure in May, 1924.

#### Orthopædics.

MR. ST. CLAIR STEUART showed a male patient affected with persistent foot-drop and loss of power of dorsi-flexion sequent on polio-myelitis which he had contracted some years previously.

By operation on June 6, 1924, the *tendo Achillis* had been released and the anterior tibial muscle sheath incised. The limb had then been fitted with a "Mackenzie" arc splint. The patient had been capable of some movement of the *tibialis anterior* muscle within a fortnight and the range of movement was increasing as the result of persistence in graduated exercises.

A man, aged forty-years, sustained an accident to his foot in 1914. The injury had led to the destruction of the astragalus and had resulted in persistent *talipes equinus*. The position of the foot had been corrected by the maintenance of weak continuous pressure in an arc splint for one month. The patient was then able to walk firmly on the heel.

Mr. St. Clair Steuart also showed cinematograph pictures illustrating the methods adopted in the education in walking of a little girl, three and a half years of age, upon whom he had operated for the relief of spastic paraplegia. He had divided the tendons of the *adductores longus* and *gracilis* and the *Achilles* tendon after which the child had been placed for six weeks in a "Mackenzie" abduction frame. Calliper splints had been employed during the ensuing period of muscle training and, although still wanting in balance, the child could walk with very slight assistance. Four months had elapsed since the operation.

#### Sarcoma of Ilium.

MR. A. J. TRINCA showed a man, aged fifty-nine years, who in December, 1921, had undergone on operation as a matter of urgency for intestinal obstruction resulting from a volvulus of the sigmoid colon. It had been found that the mesenteric attachment of the colon had been narrowed by adhesion to a large mass arising from the left wall of the pelvis. After the relief of the obstruction a portion of the tumour had been removed for microscopical examination by which the nature of the growth had been determined as a large spindle-celled sarcoma. One month

later deep X-ray therapy had been instituted and up to date the patient had received fifty-two applications. There had been an apparent arrest of the growth and the man had gained 7.5 kilograms in weight. At the time of the meeting the brawny induration induced by X-ray therapy rendered it difficult to make an abdominal examination.

#### Ulnar Paralysis.

MR. TRINCA presented a second patient who four and a half months previously had been struck by a stone which had fallen from a height of nine metres (thirty feet) on to the medial aspect of the right elbow joint. At the time no treatment other than first-aid measures was received. Examination had revealed the presence of a large mass of callus in the region of the medial condyle of the humerus, wasting of the interosseal muscles and sensory disturbance over the distribution of the ulnar nerve in the hand. The *flexor carpi ulnaris* muscle had reacted to faradic currents only; the hand muscles and interossei had reacted briskly to galvanism, but there had been no faradic response.

At operation on June 19, 1924, the ulnar nerve had been found displaced by a bony mass and involved in a dense nodular scar on the medial aspect of the arm. On removal of the scar two loose prominent bundles amounting to about one-eighth of the volume of the nerve had presented. The callus had been chiselled away and the nerve replaced in a muscle bed made from the triceps. There had been rapid recovery in function since the operation.

#### Tuberculous Bone Disease.

MR. HUGH TRUMBLE, M.C., discussed the case of a youth who had suffered from a tuberculous affection of the left hip joint since November, 1922. In July, 1923, an abscess had appeared over the lumbar region of the spine. The contents had been aspirated on July 31, 1923, and the patient had remained comparatively well until June, 1924. It had then been found necessary to empty the abscess cavity again by aspiration, but there had been no further collection of fluid and no sinus had formed.

Mr. Trumble also showed a young man affected with tuberculous disease of the third lumbar vertebra. Symptoms dated from January, 1923; a psoas abscess on the left side had been detected in February, 1924. Aspiration had been carried out on April 4, 8 and 18, 1923, and 90, 120 and 210 cubic centimetres of pus had been withdrawn. Ten cubic centimetres of Caloti fluid had been injected at each sitting. Since the last treatment there had been no increase in the size of the abscess and the formation of a sinus had been obviated.

Mr. Trumble demonstrated a caseinogen jacket used in the treatment of Pott's disease, needles used in aspiration and a special method of procedure to be adopted when attempts at aspiration by ordinary methods were unsuccessful.

#### Carcinoma of the Larynx.

DR. BRYAN FOSTER presented a male patient upon whom he had performed the operation of laryngo-fissure for the extirpation of carcinoma of the larynx ten weeks previously. Examination prior to operation by both direct and indirect laryngoscopy had disclosed an apparently small growth which seemed limited to one vocal cord. As was the not infrequent experience it had been found at operation that the growth was more extensive and had spread round the commissure to involve the other cord. Extensive removal of both cords had been found necessary. It was interesting to note that the patient was still possessed of a good voice in spite of the extensive intralaryngeal operation.

Dr. Foster also showed a female patient with a large fronto-ethmoidal mucocele presenting at the inner wall of the orbit.

#### Gynaecological Conditions.

DR. ROBERT FOWLER, O.B.E., demonstrated in selected patients tubal patency and occlusion by means of a modified Rubin's inflation apparatus. The modifications consisted in the use of air injected with the use of a small hand bulb at the inflating medium. This was very satisfactory and

rendered the apparatus portable and independent of the heavy cost of cylinders of carbon dioxide and expensive reducing valves.

Dr. Fowler also demonstrated Lucy's method of urethroscopy in females.

In conjunction with Dr. C. S. WOOD, Dr. Fowler demonstrated routine methods of treatment of sub-acute and chronic gonorrhœa affecting the urethra and cervix and the uses of diathermy and electro-coagulation in this condition.

#### Pathological Specimens.

An excellent series of colour preparations of pathological specimens was exhibited by Dr. A. J. TRINCA and Dr. NOEL GUTTERIDGE. Included among them was a specimen showing diverticula of the sigmoid colon; in one of the processes a rabbit bone had lodged and perforated the bowel wall.

Another preparation showed aneurysmal erosion of the vertebra; death had followed rupture of the sac into the thoracic cavity. Before the death of the patient the pulsations in the aneurysm had been visible from behind through his overcoat.

Renal calculi, carcinoma of the prostate, primary carcinoma of the liver, squamous-celled carcinoma of the œsophagus were represented.

An excellent specimen was one of actinomycosis of the liver.

A section of the abdominal wall showed vaseline *in situ* with surrounding intense fibrous tissue reaction and encapsulation. The vaseline had been injected in an attempt to prevent the formation of adhesions.

#### NOMINATIONS AND ELECTIONS.

THE undermentioned have been elected members of the New South Wales Branch of the British Medical Association:

CHAMPION, CHARLES GEOFFREY, M.B., Ch.M., 1923 (Univ. Sydney), Moore Street, Strathfield.

CROTHERS, CHARLES ALEXANDER, M.B., 1909 (Univ. Sydney), Willoughby Road, Willoughby (re-elected).

FINSLEBACH, FRIEDRICH WILHELM AUGUST, M.B., 1906 (Univ. Sydney), Bankstown.

MEACLE, NORMAN HARDING, M.B., Ch.M., 1924 (Univ. Sydney), 24, Lang Road, Centennial Park.

PATON, ROBERT THOMSON, M.B., Ch.M., 1923 (Univ. Sydney), Canberra, New South Wales.

PARKES, JOSEPH ALEXANDER, M.B., Ch.M., 1923 (Univ. Sydney), Mary Street, Leichhardt.

THE undermentioned have been elected members of the Queensland Branch of the British Medical Association:

MCCAFFERTY, GEORGE HENRY, M.B., Ch.B., 1923 (Univ. Edinburgh).

MCCAFFERTY, SYDNEY JOSEPH, M.B., Ch.B., 1923 (Univ. Edinburgh).

### Correspondence.

#### THE SEX PROBLEM.

SIR: It is necessary for the medical profession to devote serious and universal attention to the "sex" problem. The necessity for this obligation has become obvious to me recently by the increasing number of patients who ask my opinion on the most recent book concerning the subject and I have had direct evidence in many cases of the disturbing influence of such literature.

Parents in particular feel it incumbent on them to direct their children through the labyrinth of sex, from which labyrinth they can scarcely extricate themselves.

It is impossible to instruct youth frankly in the mysteries of sex, because, even in spite of ourselves, our teaching is self-conscious and consequently cannot be subtle. On the other hand, youth itself is enabled to obtain its own liberation from the turmoil of the accumulated secrecy surrounding sex by an intimate study of poetry, painting and sculpture.

Shakespeare in "Venus and Adonis" has accomplished what hundreds of text-books so furtively attempt to accomplish—he gives a simple word-picture of the direction of desire and of the whole adventure of love.

Two Australian poets have bravely portrayed the evils of syphilis in their verse. Youth, on the alert, will question the meaning of that "layar bell within my mind" and elucidate it without any prurient discussion.

The mind, trained to viewing intelligently and courageously the beauties of the human nude in sculpture and pictures, cannot become inverted. I am sure that all who see and comprehend the beauties of Mr. Raynor Hoff's "The Kiss," must gain an ideal conception of the other sex. In addition, Mr. Raynor Hoff gives a joyous presentment of motherhood in his "Mother and Child."

Owing to æsthetic reasons it would be difficult for the sculptor to depict the pregnant woman dreaming of the joys of parentage, so the task must fall on the creative artist and the medical man to combat the pernicious teachings of those writers who instil terror into heart of the expectant mother by drawing lurid pictures of the pangs of child-birth.

It seems conclusive to me that a just perception of the classics and the fine arts enable man to make a wide and sympathetic analysis of the origin and effects of all human emotions. The physician of the future to be successful in his work must realize this.

Yours, etc.,

FRANCIS C. CROSLÉ.

Bulli, New South Wales,  
September 15, 1924.

#### LEPROSY IN AUSTRALIA.

SIR: Will you afford me through your columns an opportunity of drawing attention to a matter which appeals to me as of vital importance to this community? I refer to the fact that although leprosy has been a notifiable and quarantinable disease in the Commonwealth for three decades, it is still as prevalent in some of the States as it has ever been. This, notwithstanding that the Leprosy Relief Association claims that the disease could be stamped out by these methods from the greater part of the Empire, including India, in thirty years. What is the explanation of the disturbing fact that in Australia, with every hygienic advantage, a sparse population and purity of race, leprosy after thirty years of compulsory notification and isolation, is increasingly prevalent amongst Europeans?

In Norway in 1856 there were 2,858 known lepers. Under a system of prophylaxis which required that the sufferers must eat and sleep alone or be admitted to an isolation hospital, this figure was reduced to 160 in 1920, yet for the last few years, the number of new cases has remained fairly constant. Although the total is so small, little progress seems of late to have been made in stamping out the disease. There is a school which claims that this is an indication of the futility of leper isolation, maintaining that the decrease noted has been a natural phase in the incidence of the disease comparable to the decline noted in western Europe in the middle ages. I confess a preference for the more rational view that leprosy is a tardily spreading, slightly contagious disease which has succumbed before the improvement in hygiene and prophylaxis developed in Europe during that period and is now yielding to a similar improvement in Norway.

As demonstrating that leprosy properly dealt with is comparatively easily checked, the following is of interest.



During 1909, four lepers were discovered amongst aborigines at Roebourne, Western Australia, other cases were subsequently found and natives in the district were subjected to periodical medical examination. All lepers were promptly isolated on an island. The result has been the stamping out of the disease in that locality, no case having been reported for some years; I was unable during my survey of the district to detect a leper amongst the natives examined. This would appear to be a striking indication of the efficacy of notification and isolation in the combating of leprosy. Why then has this same procedure failed completely to purge Norway and Australia generally when applied to the more intelligent and less insanitary white population?

Dr. Hansen informed me during my visit to Norway last year that he had recently admitted to the lazaret a leper who had been at liberty for over a year diagnosed as syphilitic. The very rarity of the disease which isolation has achieved, has left the Norwegian practitioner of today ignorant of its earliest manifestations. The disease is unrecognized and not notified as soon as it should be and its subjects are permitted freedom for a variable length of time, with the inevitable result that there is a sequence of sporadic cases without any prospect of its ultimate eradication.

This is the crux of the position in Australia, more particularly in the tropical zone. If the north is to be kept free from leprosy under closer white settlement, it should be freed whilst the sparseness of the population renders this a matter comparatively easy of attainment. Queensland has been fighting since the close of last century without success. Why? The answer is that unrecognized lepers are wandering at large there, as in Norway, and these are a perennial source of new infections. The factors which determine this freedom are two:

(1) Ignorance of the disease on the part of medical officers. Here, as in Norway, the rarity of the disease is the greatest contributory factor in its spread. Cases are variously diagnosed, usually as syphilis, and such do not come to the lazaret until the disease is well advanced or chance brings the patient under the observation of a medical man acquainted with the malady.

(2) Evasion of the law. Practitioners may find it very tempting to evade the law requiring notification to the health authority. The prospect of a leper being exiled to an island to the company of blacks, half-castes and Chinese is such a terror that it is hard for a medical man to be deaf to the impassioned entreaties of an old and perhaps respected patient. Dr. Verge voiced the sentiments of many thinking medical men when in reporting two cases of leprosy in 1914 he stated that one felt tempted to inform the patient as to his trouble and its penalty and to warn him not to consult a doctor. This may occur, particularly when the disease appears to be stationary, of long standing or of little apparent danger, and the patient pledges himself to rigorous isolation at home. In such cases the doctor is tempted to permit it and as a further sop to his conscience refrains from confirming his diagnosis by means of a bacteriological examination.

These defects in the prophylactic system are attributable to the "human element" and can in no wise be regarded as faults in the organization itself. There is, however, a further factor of importance in the spread of leprosy which is a direct result of an imperfection in the operation of the law.

Practice in Queensland requires that before a suspect be transferred to Peel Island a bacteriological examination of his serum must reveal the presence of *Bacillus leproe*. This is a sound and highly to be commended principle, but one that is not without its pitfalls. It is a common experience that lepers who at one time show numerous bacilli in a serum smear, have intervals during which only negative results are obtained. It is apparent that if a leper were to come under observation during such an interval, he would escape isolation. This would be of little moment, were his subsequent movements followed with care, but it appears that these individuals are set at liberty without condition and forthwith disappear, to wander during their infective stages amongst healthy men. Obviously these persons should be compelled as

suspects, to report at regular intervals over a long period of time, so that the existence of leprosy in an infective form can definitely be excluded.

Moreover as all "lepers" are compelled by law to undergo detention in lazarets, no provision is made for their treatment outside these institutions. Consequently a leper in whose serum on one occasion leprosy bacilli were not found, is for purposes of treatment not a leper. The fortuitous circumstance that saves him from the lazaret, precludes him from the benefits of the only treatment available for his malady. Thus is he at once at liberty and untreated; mixing with other men during exacerbations of his disease with every opportunity for the spread of infection.

What of the remedy? The machinery for dealing with the problem is already in existence. It but remains to eliminate the defects enumerated by (i.) informing medical men in the diagnosis of the disease and thoroughly investigating all cases notified as secondary syphilis; (ii.) so improving lazaret accommodation and modernizing treatment that the isolation hospital becomes to the leper what the sanatorium is to the consumptive, a haven of refuge rather than a loathsome prison. No expense should be spared in perfecting the prophylactic system since it is a question of the permanent eradication of a disease which at present threatens to be a perennial and increasing tax on the public purse. In this way with the lazaret transformed into an attractive home offering modern treatment which is not available elsewhere, and promising possibly an ultimate cure, medical men need have no scruple in notifying cases detected in their districts. (iii.) Requiring periodical re-examination of all suspected persons in whose serum bacilli are not detected, by examining smears every month over a period of twelve months or if necessary longer, whilst specific treatment is made available to the patient whilst still at liberty.

In conclusion I would appeal to medical men generally to acquaint themselves more fully with the symptoms of this dread disease that they may the better perform their duty to their patients and to the State.

Is it too much to hope, further, that medical organizations here will take up this matter with a view to the speedy adoption of efficient measures for the eradication of this ancient scourge?

Yours, etc.,

CECIL COOK, M.B., Ch.M., D.T.M. & H.,

Wandsworth Research Scholar,

London School of Tropical Medicine.

Sydney.

September 15, 1924.

## Proceedings of the Australian Medical Boards.

### NEW SOUTH WALES.

THE undermentioned have been registered, under the provisions of the *Medical Act, 1912 and 1915*, as duly qualified medical practitioners:

ANDREW, PHILIP OSWALD, M.R.C.S., 1896 (England), L.R.C.P., 1896 (London), Brooks Street, Coogee.

KERR, KEITH GARDNER, M.B., B.S., 1923 (Univ. Melbourne), Finley.

RICHARDS, ERIC ALEXANDER, M.B., B.S., 1923 (Univ. Melbourne), Lismore.

SUTHERLAND, CHARLES EVANDER VASS, M.B., B.S., 1920 (Univ. Melbourne), c/o. Commonwealth Bank, Sydney.

THWAITES, HAROLD VERDON, M.B., Ch.B., 1922 (Univ. Edinburgh), Tibbooburra.

WOODS, JOHN GRIEVE, M.B., B.S., 1923 (Univ. Melbourne), Corowa.

## Additional Qualifications.

- AIKEN, DAVID, F.R.C.S., 1919 (Edinburgh), M.D., 1922 (Univ. Edinburgh).  
 BLAKEMORE, CONRAD GEORGE HOWELL, Ch.M., 1924 (Univ. Sydney).  
 BLAKEMORE, JOHN HOWELL, Ch.M., 1924 (Univ. Sydney).  
 GEARIN, JOHN JOSEPH, Ch.M., 1924 (Univ. Sydney).  
 KENNEDY, HANS McMURDIE, Ch.M., 1924 (Univ. Sydney).  
 ROYLE, NORMAN DAWSON, Ch.M., 1924 (Univ. Sydney).

## VICTORIA.

THE undermentioned have been registered, under the provisions of the *Medical Act, 1915*, as duly qualified medical practitioners:

- EMRYS-JONES, MANSEL FRANKLIN, L.M.S.S.A., 1907 (London), 5, Charnwood Road, St. Kilda.  
 ROBERTS, WILLIAM EDGAR, M.R.C.S. (England), L.R.C.P., 1908 (London), Flinders Naval Depot, Crib Point.

## QUEENSLAND.

THE undermentioned have been registered, under the provisions of the *Medical Act of 1867*, as duly qualified medical practitioners:

- KEYS, RAYMOND ALLISON, M.B., Ch.M., 1924 (Univ. Sydney), Brisbane.  
 PEARSON, HENRY ROY, M.B., Ch.M., 1924 (Univ. Sydney), Brisbane.

## Corrected Notice.

- SHEIL, DOMINIC VICTOR, M.B., Ch.M., 1923 (Univ. Melbourne), Brisbane.

## TASMANIA.

THE undermentioned has been registered, under the provisions of the *Medical Act, 1918*, as a duly qualified medical practitioner:

- BEAN, JOHN WILLOUGHBY BUTLER, M.R.C.S., L.R.C.P., 1907 (London), B.C., 1910 (Univ. Cambridge), 1912, M.D., Latrobe.

## Medical Appointments.

DR. ROBERT DICK (B.M.A.) Director-General of Public Health, New South Wales, has been appointed a member of the Building Regulation Advisory Committee.

DR. ARTHUR DUNCAN FORBES (B.M.A.), DR. RALPH MAROLD LUDOWICI (B.M.A.) and DR. WILLIAM JOSEPH DALTON (B.M.A.) have been appointed Government Medical Officers respectively at Nyngan, Wee Waa and Mungindi, New South Wales.

DR. F. R. KERR (B.M.A.), DR. E. A. RICHARDS (B.M.A.), DR. R. Y. MATHEW (B.M.A.) and DR. W. T. NELSON (B.M.A.) have been appointed Quarantine Officers, Commonwealth Department of health.

DR. F. EMRYS-JONES, (B.M.A.) has been appointed Honorary Radiologist to the Alfred Hospital, Melbourne.

## Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xvi.

KYNUNA COTTAGE HOSPITAL, QUEENSLAND: Lady Doctor.

## Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429, Strand, London, W.C..

BRANCH.	APPOINTMENTS.
	Australian Natives' Association. Ashfield and District Friendly Societies' Dispensary. Balmalm United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham Dispensary. Manchester Unity Oddfellows' Medical Institute, Elizabeth Street, Sydney. Marrickville United Friendly Societies' Dispensary. North Sydney United Friendly Societies. People's Prudential Benefit Society. Phoenix Mutual Provident Society.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney.	
VICTORIA: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association Proprietary, Limited Mutual National Provident Club. National Provident Association.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane United Friendly Society Institute. Stannary Hills Hospital.
SOUTH AUSTRALIA: Honorary Secretary, 12, North Terrace, Adelaide.	Contract Practice Appointments at Renmark. Contract Practice Appointments in South Australia.
WESTERN AUSTRALIA: Honorary Secretary, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (WELLINGTON Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

## Diary for the Month.

- SEP. 30.—Victorian Branch, B.M.A.: Election of Members to Federal Committee.  
 OCT. 1.—Victorian Branch, B.M.A.: Branch Meeting; Election of Representatives of Divisions.  
 OCT. 3.—New South Wales Branch, B.M.A.: Delegates of Local Associations meet Council (First Day).  
 OCT. 3.—Queensland Branch, B.M.A.: Branch.  
 OCT. 4.—New South Wales Branch, B.M.A.: Delegates of Local Associations meet Council (Second Day).  
 OCT. 7.—New South Wales Branch, B.M.A.: Council (Quarterly).  
 OCT. 8.—Tasmanian Branch, B.M.A.: Branch.  
 OCT. 8.—Central Northern Medical Association, New South Wales.  
 OCT. 8.—Melbourne Paediatric Society.  
 OCT. 9.—New South Wales Branch, B.M.A.: Clinical Meeting.  
 OCT. 9.—Victorian Branch, B.M.A.: Council.  
 OCT. 9.—South Australian Branch, B.M.A.: Council.  
 OCT. 9.—Brisbane Hospital for Sick Children: Clinical Meeting.  
 OCT. 10.—Queensland Branch, B.M.A.: Council.  
 OCT. 14.—New South Wales Branch, B.M.A.: Ethics Committee.  
 OCT. 15.—Western Australian Branch, B.M.A.: Branch.  
 OCT. 17.—Eastern Suburbs Medical Association, New South Wales.

## Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor," THE MEDICAL JOURNAL OF AUSTRALIA, B.M.A. Building, 30-34, Elizabeth Street, Sydney. (Telephone: B. 4635.)

SUBSCRIPTION RATES.—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and book-sellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £2 for Australia and £2 5s. abroad per annum payable in advance.